

2018 Hawaii HIV/AIDS Integrated Epidemiologic Profile

November 2, 2020



Harm Reduction Services Branch Communicable Disease and Public Health Nursing Division Hawaii State Department of Health



Prepared for:

Harm Reduction Services Branch Communicable Disease and Public Health Nursing Division Hawaii State Department of Health

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LIST OF ABBREVIATIONS

- AIDS: Acquired Immunodeficiency Syndrome
- AIAN: American Indian/Alaskan Native
- CD4: CD4+ T-lymphocyte
- CDC: Centers for Disease Control and Prevention
- DOB: date of birth
- DBEDT: Department of Business, Economic Development & Tourism
- DS: data suppressed
- eHARS: enhanced HIV/AIDS Reporting System
- FWID: females who inject drugs
- HDOH: Hawaii Department of Health
- HIV: Human Immunodeficiency Virus
- HRSB: Harm Reduction Services Branch
- IDU: injection drug use
- MSM: men who have sex with men
- MWID: males who inject drugs
- NHPI: Native Hawaiian/Other Pacific Islander
- PLWDH: persons living with diagnosed HIV infection
- PLWDA: persons living with diagnosed HIV Infection that was ever classified as stage 3
 (AIDS)
- PWID: persons who inject drugs
- VL: viral load
- VS: virally suppressed

Executive Summary

The national 2020 HIV prevention and treatment goals include the following indicators: 1) to reduce the number of new diagnoses by at least 25%; 2) to increase the percentage of newly diagnosed persons linked to HIV medical care within one month of their HIV diagnosis to at least 85%; 3) to increase the percentage of persons with diagnosed HIV infection who are retained in HIV medical care to at least 90%; and 4) to increase the percentage of persons with diagnosed HIV infection who are virally suppressed to at least 80% (1). In 2019, *Ending the HIV Epidemic: A Plan for American* set a new national goal of 75% reduction in new HIV infections by 2025 and at least 90% reduction by 2030 (2).

Aligning with national goals, the Hawaii 2018 HIV/AIDS epidemiologic profile aims to 1) describe the epidemiology of HIV infections in Hawaii in 2018, including incidence and prevalence of HIV infection in 2018, statewide and among subgroups; 2) describe the 2018 HIV care continuum and disparities along the HIV care continuum by demographic, geographic, and risk factors; and 3) measure progress toward achieving national goals on selected indicators. In addition, special analyses were prepared for populations of interest to HIV programs, such as transgender persons, persons who inject drugs, and persons in the custody of state and federal correctional authorities.

Summary of Progress

This profile highlights the Hawaii 2018 HIV care continuum and progress to date on national goals of reducing new HIV infections and improving selected indicators along the HIV care continuum from 2015 to 2018. Please refer to the full report for disparities observed in the burden of HIV infection and selected outcomes along the HIV care continuum.

Hawaii 2018 HIV Care Continuum

At the end of 2018, there was an estimated 2,426 persons living with diagnosed HIV infection in Hawaii. The percentage of diagnosed infections among persons living with HIV at year-end 2018 in Hawaii was estimated by CDC at 88.2% (3), close to the national 2020 target of 90% (1). As a result, the total number of persons living with diagnosed or undiagnosed HIV infection in Hawaii at year-end 2018 is estimated at 2,751 (**Figure 1**).

Receipt of HIV medical care and viral suppression are based on 2,347 persons aged \geq 13 years at year-end 2017 with HIV infection diagnosed through 2017 and who resided in Hawaii at year-end 2018. Among the 2,347 persons included, 1,953 (83.2%) received any HIV medical care, 1,362 (58.0%) were retained in HIV medical care, and 1,794 (76.4%) were virally suppressed in 2018. Of note is that the percentage of persons retained in HIV medical care was far below the 2020 national target of 90% (**Figure 1**) (1).

Linkage to HIV medical care are based on a total of 69 persons who were newly diagnosed with HIV infection in 2018, of which 53 (76.8%) were linked to HIV medical care ≤1 month and 62 (89.9%) were linked ≤3 months after HIV diagnosis (**Figure 1**). To establish seamless systems that can rapidly link people to HIV medical care and support retention in care, we need to strategically examine factors at the person, provider, and systematic levels that might be preventing persons' access to and retention in HIV medical care.

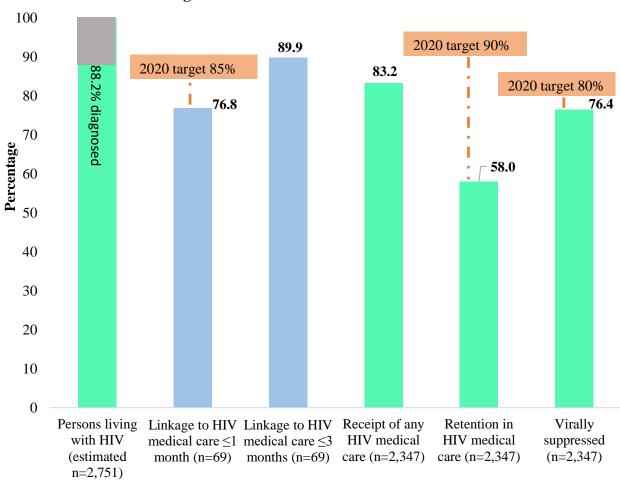
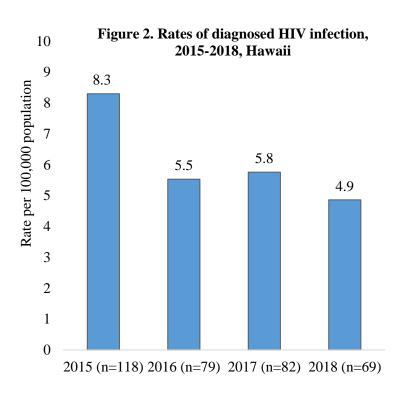


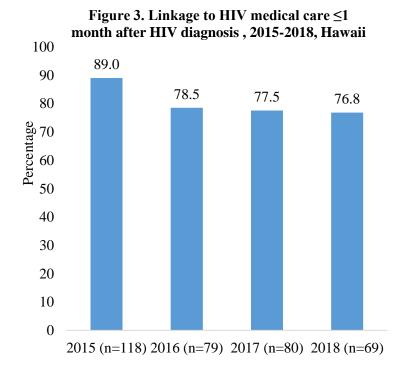
Figure 1. Hawaii 2018 HIV Care Continuum

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Numbers and rates of diagnoses of HIV infection: From the beginning of the HIV/AIDS epidemic (around 1983) to December 31, 2018, there were a total of 4,767 diagnosed HIV infections in Hawaii. During 2015-2018, the number of new HIV diagnoses decreased by 41.5% from 118 in 2015 to 69 in 2018. As a result, a significant decrease was observed in HIV incidence rate, from 8.3 per 100,000 in 2015 to 4.9 per 100,000 in 2018 (Figure 2).



Linkage to HIV medical care within one month after HIV diagnosis: From 2015 to 2018, linkage to HIV medical care ≤1 month after HIV diagnosis decreased from 89.0% in 2015 to 76.8% in 2018. From 2016 to 2018, linkage to HIV medical care within one month remained around 77% (Figure 3). Of note is the sharp decrease in the total number of new HIV diagnosis from 2015 to 2016-2018 (from 118 in 2015 to 79 in 2016). When the total number of

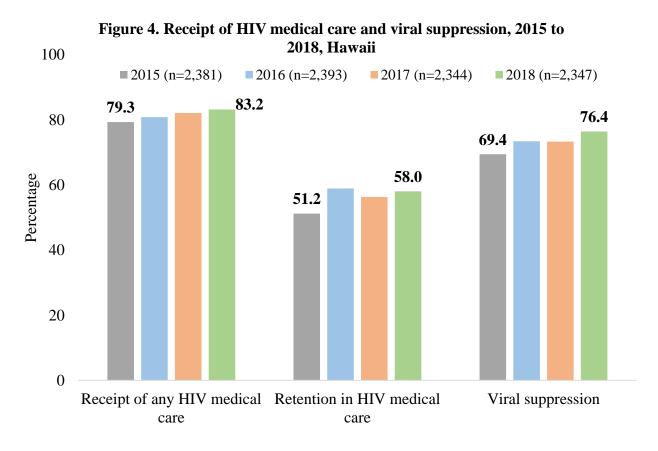


new HIV diagnosis becomes smaller each year, a few persons not linked to HIV medical care could easily skew the percentage downward. Nevertheless, strategic efforts are needed in rapidly linking persons newly diagnosed with HIV to HIV medical care.

Receipt of HIV medical care and viral suppression

From 2015 to 2018, a significant increase was observed for all three indictors: receipt of any HIV medical care, retention in HIV medical care, and viral suppression (**Figure 4**). "Receipt of any HIV medical care" is a term often interchangeable with "in HIV medical care". Percentage of receipt of any HIV medical care increased from 79.3% in 2015 to 83.2% in 2018. In other words, in 2018, about 1 in 6 persons living with HIV were out of HIV medical care. Although a significant increase was also observed in the percentage of retention in HIV medical care, the percentage was far below the 2020 national goal at 90%. It is vital to identify successful strategies to reengage persons who have fallen out of care and to have persons who ever come to HIV medical care to remain engaged in care.

It is exciting to see that the percentage of persons with diagnosed HIV infection who are virally suppressed increased steadily from 69.4% in 2015 to 76.4% in 2018. If such a rate of increase is sustained, it is very likely that we can achieve the 2020 national goal of having at least 80% of persons with HIV to be virally suppressed. We must work to sustain what we have achieved while striving for additional progress.



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Technical notes

A. Source of data

To be included in the analysis, data must meet the CDC case definition for HIV infection and eligibility criteria for HIV disease (3, 4). Data used in the development of this profile are from the State of Hawaii enhanced HIV/AIDS Reporting System (eHARS). eHARS is the nationwide, population-based data system developed by CDC for collecting, storing, and retrieving mandatory reporting of cases of HIV and/or AIDS. In the State of Hawaii, mandatory namebased reporting of AIDS started at the beginning of the epidemic (around 1983). Mandatory name-based reporting of HIV infections was not completed until March 2008. As of December 2019, Hawaii is one of the 42 states which required reporting of all levels of CD4 and viral load test results to the state or local health department (5).

The eHARS dataset exported on June 30th, 2020 was used in the analysis. The dataset included information on persons' date of birth, birth sex, race, transmission category, current address, and laboratory data such as CD4 tests and results, and viral load tests and results. Current address captured in this dataset reflects a person's most recent known residential address as of June 30th, 2020. To obtain the most recent known address at year-end 2018, address captured in the dataset exported at the end of 2018 was used as the starting point of the investigation. Several internal and external datasets were used in the investigation for confirmation of a person's most recent known residential address at year-end 2018. Whether a person was in case management or not in 2018 was obtained from the state's case management data system, known as e2 Hawaii.

B. Measures and definitions

Diagnosis of HIV infection

The term *Diagnosis of HIV infection* refers to a diagnosis of HIV infection regardless of the person's stage of disease (stage 0, 1, 2, 3[AIDS], or unknown) at the time of HIV diagnosis (5). Only persons whose residence at the time of diagnosis was in Hawaii were included in the count. The month and the year of the earliest HIV positive test result reported to the surveillance system was used to determine the diagnosis date of HIV infection. Persons who died during the same measurement year were included in the analysis. Cumulative incidence rates of diagnosed HIV infection were calculated per 100,000 populations (3). The population denominators used to compute the rates were based on the Vintage 2018 postcensal estimate file (for years 2011-2018) from the US Census Bureaus (6). Each rate was calculated by dividing the total number of

diagnoses (or prevalence) for the calendar year by the population for that calendar year and then multiplying the result by 100,000 (6).

Linkage to HIV medical care

Linkage to HIV medical care ≤ 1 month after HIV diagnosis was measured by documentation of ≥ 1 CD4 (count or percentage) or viral load test performed ≤ 1 month after HIV diagnosis, including tests performed on the same date as the date of HIV diagnosis (7). Linkage to HIV medical care ≤ 3 months after HIV diagnosis was measured by documentation of ≥ 1 CD4 (count or percentage) or viral load test performed ≤ 3 months after HIV diagnosis, including tests performed on the same date as the date of diagnosis (7). Only data from persons residing in Hawaii at the time of HIV diagnosis were included in the denominator for any chosen measurement year.

Persons living with diagnosed HIV infection (PLWDH) at year-end 2018

Prevalent cases of PLWDH in 2018 were defined as persons whose HIV/AIDS diagnosis date was on or before December 31, 2018 and who were alive and resided in the State of Hawaii at year-end 2018. Prevalent cases of persons living with diagnosed HIV infection that was ever classified as stage 3 (AIDS) (PLWDA) were defined as persons whose AIDS diagnosis date was on or before December 31, 2018 and who were alive and resided in the State of Hawaii at year-end 2018. Prevalent rates of PLWDH and of PLWDA were calculated per 100,000 population (6). The population denominators used to compute the rates were based on the Vintage 2018 postcensal estimate file (for years 2014-2018) from the US Census Bureaus (6). Each rate was calculated by dividing the total number of PLWDH for the calendar year by the population for that calendar year and then multiplying the result by 100,000. The denominators used for calculating the rates specific to age, sex at birth, race/ethnicity, and county of residence were computed by applying the appropriate vintage estimates for age, sex at birth, race/ethnicity, and county of residence for 2018 for Hawaii (6).

Receipt of HIV medical care in 2018

Receipt of HIV medical care during 2018 was based on data for persons whose HIV infection was diagnosed by year-end 2017 and who were alive and resided in the State of Hawaii at year-end 2018. Only persons aged \geq 13 years at year-end 2017 were included in the analysis. Receipt of any HIV medical care was measured by documentation of \geq 1 CD4 (count or percentage) or viral load test performed in 2018 (7). Retention in HIV medical care was measured by

documentation of ≥ 2 or more CD4 (count or percentage) or viral load tests performed ≥ 3 months apart during 2018 (7). In this report, the required time window used between the two sets of CD4 or viral load test was ≥ 90 days.

In care in 2018

The definition of in care in this document was the same as receipt of any HIV medical care. Whether an individual was in care in 2018 was based on data for persons whose HIV infection was diagnosed by year-end of 2017, who was ≥13 years old at year-end 2017, and who were alive and resided in the State of Hawaii at year-end 2018. It was measured by documentation of ≥1 CD4 (count or percentage) or viral load test performed in 2018. The terms, "In care" and "receipt of any HIV medical care" are interchangeable in this document.

Not in care in 2018

Not in care in 2018 was defined as no documentation of any CD4 (count or percentage) or viral load tests performed in 2018. It was based on data for persons whose HIV infection was diagnosed by year-end of 2017, who was ≥13 years old at year-end 2017, and who were alive and resided in the State of Hawaii at year-end 2018.

Viral suppression in 2018

Viral suppression in 2018 was defined as having a viral load (VL) test result < 200 copies/mL at the last viral load test in 2018 (7). Viral suppression was calculated among the following three populations:

- (1) all persons aged ≥13 years at year-end 2017 with HIV infection diagnosed by year-end 2017 and who were alive and resided in Hawaii at year-end 2018; hereafter referred to as 'All persons'.
- (2) all persons aged ≥13 years at year-end 2017 with HIV infection diagnosed by year-end 2017, who were alive and resided in Hawaii at year-end 2018, and who had documentation of ≥1 CD4 or VL test in 2018; hereafter referred to as 'Persons in care in 2018' or 'Persons with ≥1 CD4/VL test in 2018'.
- (3) all persons aged ≥13 years at year-end 2017 with HIV infection diagnosed by year-end 2017, who were alive and resided in Hawaii at year-end 2018, and who had documentation of ≥2 CD4 or VL tests performed ≥3 month apart during 2018; hereafter referred to as 'Persons retained in care in 2018' or 'Persons with ≥2 CD4 or VL tests in 2018'.

C. Area of residence

Residence at HIV diagnosis was used for diagnosis of HIV infection and linkage to HIV medical care in each selected measurement year. A person's most recent known address at year-end 2018 was used for prevalence data, receipt of HIV medical care, in care or not in care, retention of HIV medical care, and viral suppression in 2018. To determine whether a person resided in the State of Hawaii at year-end 2018, vigorous investigation was conducted using several available datasets.

When a person was determined to reside in Hawaii at year-end 2018 but lacked information on county, missing data on county were then distributed back among counties based on the proportion, in each county, of prevalent cases of PLWDH and PLWDA for which county data was available. For example, among prevalent cases of PLWDH who had data on county (n=2,366), the proportion of each county was: Hawaii County, 16.9%, Honolulu County, 67.3%, Kauai County, 3.6%, and Maui County, 12.2%. Among the total 60 persons missing county data, $10 (=60 \times 16.9\%)$ were redistributed back to Hawaii County, $41 (=60 \times 67.3\%)$ to Honolulu County, $2 (=60 \times 3.6\%)$ to Kauai County, and $7 (=60 \times 12.2\%)$ to Maui County.

D. Policy on reporting of small numbers

Harm Reduction Services Branch (HRSB), Division of Communicable Disease and Public Health Nursing, Hawaii Department of Health (HDOH) recently updated its policy on data release of small numbers. This policy outlines the following:

- 1) Data may be reported at the state and county level only.
- 2) At the state level, data will be suppressed if the size of the population of interest (the denominator or stratum) is <100, unless they are in a category labeled "other" or "unknown". No suppression rules are required for the numerator, or cell counts, if the size of the population of interest (the denominator or stratum) is ≥100.
- 3) At the county level, data will be suppressed if the size of the population of interest (the denominator or stratum) is <100 or the numerator (cell count) is <5, unless they are in a category labeled "other" or "unknown".
- 4) At both the state and county levels, data will be suppressed or aggregated to preclude arithmetic calculation of a suppressed cell.
- 5) At both the state and county levels, a count of zero is allowed unless it is a threat to confidentiality.

However, the total counts of HIV diagnosis and the total counts of persons living with diagnosed HIV infection/ever classified as stage 3 (AIDS), for single-year, multiple years, or cumulative, and rates/proportions based on those counts for a single county or of multiple counties with no further stratification, are exempted from data suppression, even for total counts <5.

Nevertheless, data will be suppressed at both the state and county level if the total counts are <5 and are used as a denominator for additional HIV related outcomes (e.g., linkage to HIV medical care, receipt of and retention in HIV medical care, viral suppression, etc.). In addition, data will be suppressed at the county level if the total counts are <5 and are further stratified (e.g., by sex, age, race/ethnicity, etc.).

Population of interest, sometimes referred to as the denominator, subgroup, or stratum, should be based on federal/state official publications, such as the U.S. census, vintage postcensal estimates from the U.S. Census Bureau, or from a state government official agency. For subgroups, or strata, where population data are not available, suppression rules will be based on the size of the underlying population that is most similar to the group. For example, for Black men who have sex with men, suppression rules would be applied based on the size of population of Black men for the selected geographic areas.

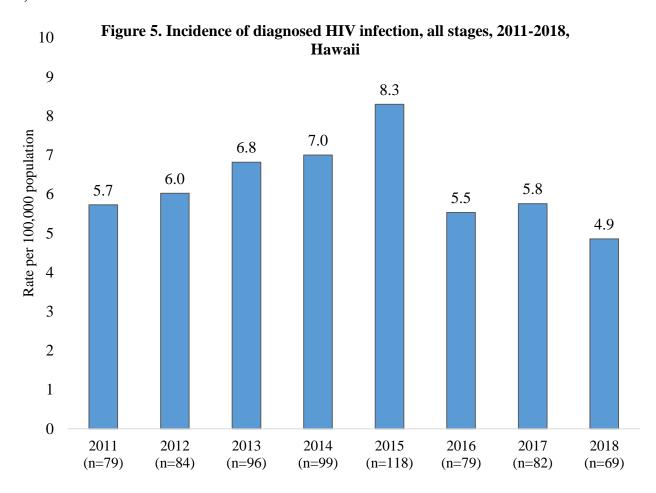
Results

A. Epidemiology of HIV/AIDS, 2018, Hawaii

I. Number and incidence rate of HIV infection

1) Incidence of diagnosed HIV infection, all stages, 2011-2018

Incidence rates of diagnosed HIV infection were calculated at the state level only. Only infections from persons who resided in Hawaii at the time of HIV diagnosis were counted. Incidence rates by selected characteristics are not reported because of small counts of infections in most categories. From 2011 to 2018, there is no trend of linear increase or decrease in the rates of diagnosed HIV infection in Hawaii. However, incidence rates of diagnosed HIV infection increased significantly from 5.7 in 2011 to 8.3 per 100,000 population in 2015 (P=0.005). It then decreased significantly from 8.3 in 2015 to 4.9 per 100,000 population in 2018 (P=0.003, **Figure 5**).



Note: Only data from persons residing in Hawaii at the time of HIV diagnosis were included. N refers to the total number of diagnoses in each year. Number of new diagnoses each year, in particular, most recent years, are incomplete and subject to change due to delays in reporting, the ongoing national deduplication project, and ongoing data cleaning.

2) Diagnoses of HIV infection by selected characteristics

Table 1 demonstrates characteristics of persons whose HIV infections were diagnosed from the beginning of the epidemic (around 1983) through 2018 (cumulative) as well as those whose HIV infections were diagnosed in more recent years, between 2014 and 2018. Only data from persons residing in Hawaii at the time of HIV diagnosis were included.

Among the total of 4,767 persons diagnosed with HIV infection, 89.7% were males, about a third each were among persons aged 25-34 years (34.2%) and 35-44 years (32.6%), and another sixth (16.6%) were among persons aged 45-54 years. Persons aged 13-24 years accounted for 9.2%. Whites constituted the highest proportion (53.1%), followed by Asians (15.8%), NHPIs (11.3%), and Hispanics/Latinos (7.9%). MSM was the leading transmission category (71.1%), followed by heterosexual contact with a person known to have, or to be at high risk for, HIV infection (8.5%), injection drug use (IDU, 7.5%), and MSM & IDU (7.2%). Honolulu County accounted for almost three quarters (73.4%) of all diagnoses, followed by Hawaii County (12.2%), Maui County (9.9%), and Kauai County (4.5%).

When comparing the most recent 5-year period (2014-2018) to previous years, an increase was observed in the proportions of infection among persons in age group 13-24 years (13.4 vs 8.8%, respectively), 25-34 years (39.5% vs 33.6%, respectively), and ≥55 years (11.4% vs 6.3%, respectively). A decrease was found in the proportion of infection among persons in age group 35-44 years (20.8% vs 33.8%, respectively). Proportion of infections among Whites decreased (30.8% vs 55.4%, respectively) but increased in other racial/ethnic groups, in particular, in Asians (22.1% vs 15.2%, respectively), multiple races (14.5% vs 5.4%, respectively), and Blacks (9.4% vs 4.6%, respectively). Percentage among NHPIs were similar between the two time periods (12.3% vs 11.2%, respectively).

By transmission category, a slight decrease was observed in the proportions among MSM (67.6% vs 71.4%, respectively) and MSM&IDU (4.9% vs 7.4%, respectively). An increase was observed in the proportion among infection attributed to male heterosexual contact with a person known to have, or at increased risk for, HIV infection (9.4% vs 2.4%, respectively). When examined by county of residence at HIV diagnosis, proportion from persons residing in Honolulu County increased slightly (76.7% vs 73.1%, respectively) while in Hawaii county, the proportion decreased (9.6% vs 12.5%, respectively).

Table 1. Diagnose of HIV infection (all stages) through 2018, by selected characteristics and time periods, Hawaii

Characteristics				re 2014 -4,320)		nulative 4,767)
	No.	Percent	No.	Percent	No.	Percent
Progressed to stage 3 (AIDS)	118	26.4	3,397	78.6	3,515	73.7
Birth sex						
Female	41	9.2	452	10.5	493	10.3
Male	406	90.8	3,868	89.5	4,274	89.7
Age at diagnosis in years						
<13	2	0.5	25	0.6	27	0.6
13-24	60	13.4	379	8.8	439	9.2
25-34	177	39.6	1,453	33.6	1,630	34.2
35-44	93	20.8	1,460	33.8	1,553	32.6
45-54	64	14.3	729	16.9	793	16.6
≥55	51	11.4	274	6.3	325	6.8
Race/ethnicity						
Hispanic, all races	46	10.3	331	7.7	377	7.9
American Indian/Alaska Native	2	0.5	13	0.3	15	0.3
Asian	99	22.1	656	15.2	755	15.8
Black	42	9.4	200	4.6	242	5.1
Native Hawaiian/Other Pacific Islander	55	12.3	485	11.2	540	11.3
White	138	30.8	2,392	55.4	2,530	53.1
Multiple races	65	14.5	235	5.4	300	6.3
Other/Unknown ^a	0	0.0	8	0.2	8	0.2
Transmission category						
Male-to-male sexual contact (MSM)	302	67.6	3,086	71.4	3,388	71.1
Injection drug use (IDU), female	9	2.0	123	2.9	132	2.8
IDU, male	21	4.7	204	4.7	225	4.7
MSM & IDU	22	4.9	319	7.4	341	7.2
Heterosexual contact ^b , female	22	4.9	236	5.5	258	5.4
Heterosexual contact, male	42	9.4	105	2.4	147	3.1
Perinatal	2	0.5	15	0.4	17	0.4
Other ^c	27	6.0	232	5.4	259	5.4
County of residence at HIV diagnosis		0.0			207	
Hawaii County	43	9.6	540	12.5	583	12.2
Honolulu County	343	76.7	3,155	73.0	3,498	73.4
•						
•						
Kauai County Maui County	21 40	4.7 9.0	195 430	4.5 10.0	3,498 216 470	4.5 9.9

Note. Only data from persons who resided in Hawaii at the time of HIV diagnosis were included. Percent represents column percent except for the row "Progress to stage 3", which represents row percent. Percent total may not add up to 100 because of rounding. Cumulative: from the beginning of the epidemic through 2018.

^a Included cases not able to be differentiated between Asian and Native Hawaiian/Other Pacific Islander.

^b Included heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

^c Included hemophilia, blood transfusion, and risk factors not reported or not identified.

II. Prevalent cases and prevalence rate

1) Prevalence of persons living with diagnosed HIV infection (PLWDH) or with infection ever classified as stage 3 (AIDS) (PLWDA) at year-end 2018, Hawaii

After extensive data cleaning, there remained 243 individuals whose location was not known at year-end 2018. Among those 243 persons, there was a total of 183 (75.3%) persons whose HIV infection was diagnosed through 2008 and who had not been in care since 2008. Among those 183 persons, 100 (54.6%) were living with stage 3 (AIDS). Based on the natural progression of HIV infection, if a person was not in care for ≥10 years since HIV diagnosis, the odds of survival were likely low (8). It is therefore reasonable to assume that those persons had moved away from Hawaii. Those 183 persons were excluded from further analysis. As a result, a total of 2,426 persons were identified as persons living with diagnosed HIV infections (PLWDH) and a total of 1,381 were identified as persons living with diagnosed HIV infection that was ever classified as stage 3 (AIDS) (PLWDA) at year-end 2018 in Hawaii.

County data was missing for 60 (2.5%) persons among the 2,426 cases of PLWDH and 30 (2.2%) persons among the 1,381 cases of PLWDA. Cases with missing data on county of residence were distributed back among counties based on the proportion, in each county, of prevalent cases of PLWDH and PLWDA for which county data was available. According to CDC's most recent estimate, percentage of persons living with diagnosed HIV infection accounted for 88.2% of persons living with diagnosed or undiagnosed HIV infection in Hawaii (3). As a result, there was an estimated 2,751 persons living with diagnosed or undiagnosed HIV infection in Hawaii at year-end 2018 (**Figure 1**).

Prevalence of PLWDH and of PLWDA at the state level, county level, and by selected characteristics are shown in **Table 2**. The prevalence rate (calculated per 100,000 population) of PLWDH in Hawaii (170.8) was much lower than that of the 2017 national average (308.9) (9). The rate for males was 304.2, eight times as large as that of females (36.9). Among persons of different age groups, the highest rate (352.2) was among persons aged 45-54 years old and the lowest rate (1.8) was among those younger than 13 years. Among different race/ethnicity groups, the highest rate (543.7) was among Blacks, followed by Whites (365.5). The lowest rates were found among Asians (75.8) and those of multiple races (89.6). Similar patterns were observed in the prevalence rate of PLWDA.

Table 2. Prevalence of persons living with diagnosed HIV infection (PLWDH) or with infection ever classified as stage 3 (AIDS) (PLWDA) at year-end 2018, by selected characteristics, Hawaii

		PLWH		P	LWA				
Characteristics	2018 general population	No.	Prevalence	No.	Prevalence				
National 2017	324,985,539	1,003,782	308.9	524,904	161.4				
State total	1,420,507	2,426	170.8	1,381	97.2				
County of residence at year-end 2018 ^a									
Hawaii County	201,509	409	203.0	248	123.1				
Honolulu County	979,858	1,634	166.8	910	92.9				
Kauai County	72,168	87	120.6	58	80.4				
Maui County	166,972	296	177.3	165	98.8				
Birth sex									
Female	709,302	262	36.9	155	21.9				
Male	711,291	2,164	304.2	1,226	172.4				
Age at year-end 2018									
<13	223,455	4	1.8	2	0.9				
13-24	200,254	42	21.0	8	4.0				
25-34	202,953	298	146.8	78	38.4				
35-44	180,308	373	206.9	162	89.8				
45-54	170,922	602	352.2	376	220.0				
≥55	442,702	1,107	250.1	755	170.5				
Race/ethnicity b									
Hispanic, all races	150,891	267	176.9	144	95.4				
American Indian/Alaska Native	3,033	5	164.9	0	0.0				
Asian	517,118	392	75.8	242	46.8				
Black	27,955	152	543.7	81	289.8				
Native Hawaiian/Other Pacific Islander	133,926	220	164.3	141	105.3				
White	310,830	1,136	365.5	633	203.6				
Multiple races	276,840	248	89.6	139	50.2				

Note. Only data from persons who resided in Hawaii at year-end 2018 were included. Rates were per 100,000 population. The most updated national data on the prevalence of persons living with diagnosed HIV and persons living with stage 3 (AIDS) was 2017 (9).

^a County data was missing among 60 (2.5%) of all PLWDH and 30 (2.2%) among all PLWDA. Missing data was redistributed back to each county based on the proportions of each county among those who had known data on county.

^b Excluding one person unable to be differentiated between Asian and Native Hawaiian/Other Pacific Islander and 5 persons of unknown race/ethnicity.

2) Characteristics of PLWDH and of PLWDA

Table 3 compares the distribution of age, sex, race/ethnicity, and county of residence for PLWDH and PLWDA at year-end 2018 with the 2018 general population in the state of Hawaii. Males were dominant and overrepresented in both populations (89.2% of PLWDH and 88.8% of PLWDA vs 50.1% of the general population). In general, older persons made up a larger proportion of both PLWDH and of PLWDA and were overrepresented in both populations compared to younger ones (e.g. persons aged ≥45 years constituted 43.2% of the general population but 70.4% of PLWDH and 81.9% of PLWDA). Among persons of different racial/ethnic groups, Whites (46.8% of PLWDH, 45.8% of PLWDA and 21.9% of the general population) and Blacks/African Americans (6.3% and 5.9%, respectively vs 2.0% of the general population) were overrepresented while Asians (16.2% and 17.5%, respectively vs 36.4% of the general population) and persons of multiple races (10.2% and 10.1%, respectively vs 19.5% of the general population) were underrepresented.

Differences by county were subtle. The proportions of PLDWH and PLWDA in both Honolulu County (67.4% and 65.9%, respectively) and Kauai County (3.6% and 4.2%, respectively) were slightly smaller than that of the general population (69.0% in Honolulu County and 5.1% in Kauai County). In Hawaii County, however, proportions of PLDWH (16.9%) and PLWDA (18.0%) were higher than that of the general population (14.2%).

MSM was the leading risk factor for both populations (73.0% of PLWDH and 71.6% of PLWDA), followed by female heterosexual contact with a person known to have, or to be at high risk for, HIV infection (6.7% and 7.2%, respectively), then by MSM & IDU (6.8% and 6.9%, respectively). Less than one percent of all infections was attributed to perinatal transmission (0.6% for both populations).

Table 3. Characteristics of persons living with diagnosed HIV infection (PLWDH) or with infection ever classified as stage 3 (AIDS) (PLWDA) at year-end 2018, Hawaii

	•	PLWDH		PLWI)A
Characteristics	Percent of 2018 population	No.	Percent	No.	Percent
State total	100	2,426	100	1,381	100
Birth sex					
Female	49.9	262	10.8	155	11.2
Male	50.1	2,164	89.2	1,226	88.8
Age at year-end 2018					
<13	15.7	4	0.2	2	0.1
13-24	14.1	42	1.7	8	0.6
25-34	14.3	298	12.3	78	5.6
35-44	12.7	373	15.4	162	11.7
45-54	12.0	602	24.8	376	27.2
≥55	31.2	1,107	45.6	755	54.7
Race/ethnicity ^a					
Hispanic, all races	10.6	267	11.0	144	10.4
American Indian/Alaska Native	0.2	5	0.2	0	0.0
Asian	36.4	392	16.2	242	17.5
Black	2.0	152	6.3	81	5.9
Native Hawaiian/Other Pacific Islander	9.4	220	9.1	141	10.2
White	21.9	1,136	46.8	633	45.8
Multiple races	19.5	248	10.2	139	10.1
Transmission category					
Male-to-male sexual contact (MSM)	N/A	1,772	73.0	989	71.6
Injection drug use (IDU), female	N/A	58	2.4	38	2.8
IDU, male	N/A	86	3.5	60	4.3
MSM & IDU	N/A	164	6.8	95	6.9
Heterosexual contact ^b , female	N/A	162	6.7	99	7.2
Heterosexual contact b, male	N/A	87	3.6	50	3.6
Perinatal	N/A	14	0.6	8	0.6
Risk factor not reported/identified	N/A	83	3.4	42	3.0
County of residence at year-end 2018 °					
Hawaii County	14.2	409	16.9	248	18.0
Honolulu County	69.0	1,634	67.4	910	65.9
Kauai County	5.1	87	3.6	58	4.2
Maui County	11.8	296	12.2	165	11.9

Note. Only data from persons who resided in Hawaii at year-end 2018 were included. Percentages may not add up to 100% due to rounding.

^a Excluding one person unable to be differentiated between Asian and Native Hawaiian/Other Pacific Islander and 5 persons of unknown race/ethnicity.

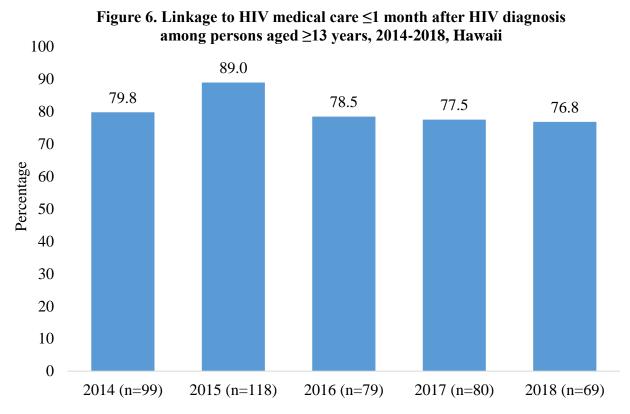
^b Included heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

^c County data was missing among 60 (2.5%) of all PLWDH and 30 (2.2%) among all PLWDA. Missing data was redistributed back to each county based on each county's proportion among persons who had data on county.

B. HIV care continuum, 2018, Hawaii

I. Linkage to HIV medical care

From 2014 to 2018, linkage to HIV medical care ≤1 month did not change much. Except for the increase from 79.8% in 2014 to 89.0% in 2015, linkage to HIV medical care within one month remained around 78% from 2016 to 2018 (**Figure 6**).



Note: data included persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. Only data from persons residing in Hawaii and ≥ 13 years old at the time of HIV diagnosis were included. N refers to the total number of diagnoses in each year.

Table 4 presents linkage to care by selected characteristics among Hawaii residents with HIV diagnoses in 2018. Due to small numbers in most of the categories, results should be interpreted with caution. Among the 69 persons with HIV infection diagnosed in 2018, 53 (76.8%) were linked to HIV medical care \leq 1 month and 62 (89.9%) were linked to HIV medical care \leq 3 months after HIV diagnosis. No statistically significant differences were observed for any of the selected characteristics.

Table 4. Linkage to HIV medical care during 2018 among persons aged ≥13 years at the time of HIV diagnosis, by selected characteristics, Hawaii

	No.		month	≤ ;	3 months
Characteristics	total	No.	Percent	No.	Percent
Total	69	53	76.8	62	89.9
Birth sex					
Female	6	6	100	6	100
Male	63	47	74.6	56	88.9
Age at HIV diagnosis in years					
13-24	9	7	77.8	9	100
25-34	26	16	61.5	21	80.8
35-44	20	19	95.0	19	95.0
45-54	8	6	75.0	8	100.0
>=55	6	5	83.3	5	83.3
Race/ethnicity					
Hispanic, all races	7	5	71.4	6	85.7
American Indian/Alaska Native	0	N/A	N/A	N/A	N/A
Asian	20	18	90.0	19	95.0
Black/African American	5	4	80.0	5	100
Native Hawaiian/Other Pacific Islander	6	5	83.3	6	100
White	21	16	76.2	19	90.5
Multiple races	10	5	50.0	7	70.0
Transmission category					
Male-to-male sexual contact (MSM)	48	37	77.1	46	95.8
Injection drug use (IDU), female	0	N/A	N/A	N/A	N/A
IDU, male	4	DS	DS	DS	DS
MSM & IDU	4	DS	DS	DS	DS
Heterosexual contact ^a , female	1	DS	DS	DS	DS
Heterosexual contact, male	1	DS	DS	DS	DS
Other b	11	8	72.7	8	72.7
County of residence at HIV diagnosis					
Hawaii County	6	2	33.3	5	83.3
Honolulu County	57	46	80.7	51	89.5
Kauai County	1	DS	DS	DS	DS
Maui County	5	4	80.0	5	100.0

Note. Only data from persons who resided in Hawaii at the time of HIV diagnosis was included. Linkage to HIV medical care was measured by documentation of ≥ 1 CD4 or viral load test ≤ 1 month or ≤ 3 months after HIV diagnosis. N/A: not applicable; DS: data suppressed.

^a Included heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

^b Included risk factors not reported or not identified.

II. Receipt of HIV medical care

Table 5 describes receipt of HIV medical care and retention in HIV medical care in 2018 by selected characteristics. Both were based on data among persons aged ≥13 years at year-end 2017 with HIV infection diagnosed through 2017 and who were alive and residing in the state of Hawaii at year-end 2018. Among the 2,347 persons included in the analysis, 1,953 (83.2%) received any HIV medical care in 2018 and 1,362 (58.0%) were retained in HIV medical care.

Percentage of receipt of any HIV medical care did not differ significantly by birth sex or county of residence but did differ significantly by person's age (P<.0001), race/ethnicity (P<.0001), transmission category (P<.0001) and case management status (P<.0001). The percentage increased as age increased, with the highest percentage among persons aged \geq 55 years (86.6%) and the lowest among persons aged 13-24 years (64.6%). Percentage of receipt of any HIV medical care was highest among persons whose infection was attributed to male-to-male sexual contact (84.5%) and females who inject drugs (84.5%). The lowest percentage of receipt of any HIV medical care was among persons whose infection was attributed to the other category of risk factors, including hemophilia, blood transfusion, and risk factors not reported or not identified (61.4%). Percentage of receipt of any care was much higher among persons in case management (94.1%) than those not in case management (72.5%) in 2018.

Percentage of retention in HIV medical care did not differ significantly by birth sex but did differ significantly by person's age, race/ethnicity, transmission categories, county of residence, and case management status (Ps<.001). The percentage increased as age increased (e.g. 63.4% among persons aged \geq 55 years old vs 44.7% among persons aged 25-34 years or 47.9% among persons aged 13-24 years). Asians had the highest percentage (66.0%), followed by NHPIs (65.1%). Blacks/African Americans (38.1%) and Hispanics (50.8%) had the lowest percentages. Results of AIAN should be interpreted with caution due to small number of individuals in this category. By county of residence, Hawaii County had the lowest percentage (52.0%).

Percentage of retention in care was highest among persons whose infection was attributed to perinatal transmission (70.0%), followed by females who inject drugs and heterosexual contact (male, 62.8%; female, 61.9%). The lowest percentage was among persons whose infection was attributed to the other category of risk factors, including hemophilia, blood transfusion, and risk factors not reported or not identified (42.9%).

Table 5. Receipt of HIV medical care during 2018 among persons aged ≥13 years at year-end 2017 with HIV infection diagnosed through 2017 and residing in Hawaii at year-end 2018, by selected characteristics, Hawaii

Chamatanistics	All	≥1 CI	04 /VL tests	≥ 2 CI	04/VL tests ^a
Characteristics	persons	No.	Percent	No.	Percent
Total	2,347	1,953	83.2	1,362	58.0
In case management in 2018					
Yes	1,166	1,097	94.1	804	69.0
No	1,181	856	72.5	558	47.2
Birth sex					
Female	253	200	79.1	146	57.7
Male	2,094	1,753	83.7	1,216	58.1
Age at year-end 2017 in years					
13-24	48	31	64.6	23	47.9
25-34	293	212	72.4	131	44.7
35-44	351	275	78.3	180	51.3
45-54	652	566	86.8	392	60.1
≥55	1,003	869	86.6	636	63.4
Race/ethnicity ^b					
Hispanic, all races	258	212	82.2	131	50.8
American Indian/Alaska Native	5	4	80.0	3	60.0
Asian	371	329	88.7	245	66.0
Black	147	91	61.9	56	38.1
Native Hawaiian/Other Pacific Islander (NHPI)	212	189	89.2	138	65.1
White	1,112	929	83.5	651	58.5
Multiple races	236	195	82.6	134	56.8
Transmission category					
Male-to-male sexual contact (MSM)	1,722	1,455	84.5	1,013	58.8
Injection drug use (IDU), female	58	49	84.5	36	62.1
IDU male	83	63	75.9	40	48.2
MSM & IDU	158	130	82.3	83	52.5
Heterosexual contact c, female	160	133	83.1	99	61.9
Heterosexual contact, male	86	72	83.7	54	62.8
Perinatal	10	8	80.0	7	70.0
Other ^d	70	43	61.4	30	42.9
County of residence at year-end 2018 ^e		-			
Hawaii County	402	333	82.8	209	52.0
Honolulu County	1,571	1,302	82.9	935	59.5
Kauai County	85	70	82.4	54	63.5
Maui County	289	248	85.8	164	56.7
**CDA CDA E1		2-10) Tl + +	107	50.1

 $^{^{}a}$ CD4, CD4+ T-lymphocyte count or percentage; VL, viral load (copies/mL). The two tests must be performed ≥3 months apart during 2018.

^b Excluded one not differentiated between Asian and NHPI and 5 of unknown race/ethnicity.

^c Included heterosexual contact with a person known to have, or to be at high risk for HIV infection.

^d Included hemophilia, blood transfusion and risk factors not identified or reported.

^e Missing data on county (n=60, 2.6%) were redistributed.

III. Viral suppression

Viral suppression was based on data among persons aged ≥13 years at year-end 2017 with HIV infection diagnosed through 2017 and who were alive and residing in the state of Hawaii at year-end 2018. A total of 2,347 persons were included in the analysis, of which 1,794 (76.4%) were virally suppressed in 2018. Among persons who received any HIV medical care in 2018 (n=1,953), percentage of viral suppression increased to 91.9%. Among persons who were retained in care in 2018 (n=1,362), the percentage of viral suppression was 93.6%.

Table 6 describes viral suppression by selected characteristics. Among the 2,347 persons ≥13 years at year-end 2017, with HIV infections diagnosed through 2017, and who were alive and residing in Hawaii at year-end 2018 (hereafter referred as "all persons"), percentage of viral suppression was significantly higher among persons in case management (86.7%) than those not (66.3%) (*P*<.0001). Nevertheless, the difference was no longer statistically significant if looking only among persons who received any HIV medical care (92.2% vs 91.5%) or those retained in care in 2018 (93.3% vs 94.1%). The same pattern was found by transmission category. Among all persons, the highest percentage of viral suppression was among females who inject drugs (79.3%), followed by heterosexual contacts (female 78.1%; male 75.6%), followed by MSM (78.0%). The lowest was among infections attributed to the other category of risk factors, including hemophilia, blood transfusion, and risk factors not reported or not identified (48.8%).

Significant differences were observed by age among all three groups of populations. In general, the percentage of viral suppression increased significantly as age increased, with the highest percentage among persons aged ≥55 years (82.3%) and the lowest among persons in the age group 25-34 years (60.4%). Significant differences were observed by a person's race/ethnicity among all persons and those who received any care in 2018, but not among those retained in care in 2018. The highest percentage was among Asians (80.3%) and Whites (73.5%). The lowest was among Blacks/African Americans (64.5%) and Hispanics (72.4%). Interpretation on AIAN should be with caution due to small counts.

No significant difference was observed by county of residence.

Table 6. HIV viral suppression during 2018 among persons aged ≥13 years at year-end 2017 with HIV infection diagnosed through 2017 and residing in Hawaii at year-end 2018, by selected characteristics, Hawaii

Characteristics	All per	rsons	Persons with ≥ 1 CD4 or VL tests			ons with ≥ 2 or VL tests ^a
	Total	VS a	Total	VS	Total	VS
	No.	No. (%)	No.	No. (%)	No.	No. (%)
Total	2,347	1,794 (76.4)	1,953	1,794 (91.9)	1,362	1,275 (93.6)
In case management in 2018						
Yes	1,166	1,011 (86.7)	1,097	1,011 (92.2)	804	750 (93.3)
No	1,181	783 (66.3)	856	783 (91.5)	558	525 (94.1)
Birth sex						
Female	253	186 (73.5)	200	186 (93.0)	146	135 (92.5)
Male	2,094	1,608 (76.8)	1,753	1,608 (91.7)	1,216	1,140 (93.8)
Age at year-end 2017 in years						
13-24	48	30 (62.5)	31	30 (96.8)	23	23 (100)
25-34	293	177 (60.4)	212	177 (83.5)	131	115(87.8)
35-44	351	236 (67.2)	275	236 (85.8)	180	158 (87.8)
45-54	652	526 (80.7)	566	526 (92.9)	392	372(94.9)
≥55	1,003	825 (82.3)	869	825 (94.9)	636	607 (95.4)
Race/ethnicity (excluding one not of	lifferenti	ated between As	sian and	NHPI and five	of unkno	own race)
Hispanic, all races	258	195(75.6)	212	195 (92.0)	131	125 (95.4)
American Indian/Alaska Native	5	4 (80.0)	4	4 (100)	3	3 (100)
Asian	371	308 (83.0)	329	308 (93.6)	245	232 (94.7)
Black/African American	147	77 (52.4)	91	77 (84.6)	56	51 (91.1)
Native Hawaiian/Other Pacific Islander (NHPI)	212	167 (78.8)	189	167 (88.4)	138	126 (91.3)
White	1,112	869 (78.2)	929	869 (93.5)	651	615 (94.5)
Multiple races	236	170 (72.0)	195	170 (87.2)	134	119 (88.8)
Transmission category						
Male-to-male sexual contact (MSM)	1,722	1,343 (78.0)	1,455	1,343 (92.3)	1,013	955 (94.1)
Injection drug use (IDU), female	58	46 (79.3)	49	46 (93.9)	36	35 (97.2)
IDU, male	83	52 (62.7)	63	52 (82.5)	40	34 (87.5)
MSM & IDU	158	117 (74.1)	130	117 (90.0)	83	75 (90.4)
Heterosexual contact b, female	160	125 (78.1)	133	125 (94.0)	99	92 (92.9)
Heterosexual contact, male	86	65 (75.6)	72	65 (90.3)	54	52(96.3)
Perinatal	10	7 (70.0)	8	7 (87.5)	7	6 (85.7)
Other ^c	70	39 (55.7)	43	39 (90.7)	30	28 (90.0)
County of residence at year-end 20	18 ^d					
Hawaii County	402	308 (76.6)	333	308 (92.5)	209	199 (95.2)
Honolulu County	1,571	1,188 (75.6)	1,302	1,188 (91.2)	935	865 (92.5)
Kauai County	85	67 (78.8)	70	67 (95.7)	54	53(98.2)
Maui County	289	231 (79.9)	248	230 (93.1)	164	158 (96.3)

^a CD4, CD4+ T-lymphocyte; VL, viral load; VS: virally suppressed (defined as last VL test in 2018 with a result of VL<200 copies/mL); the two tests (CD4/VL) should be performed ≥3 months apart during 2018.

^b Included heterosexual contact with a person known to have, or to be at high risk for HIV infection.

^c Included hemophilia, blood transfusion and risk factors not reported or not identified.

^d Missing data on county (n=60, 2.6%) were redistributed.

IV. Progress on receipt of HIV medical care and viral suppression, 2015-2018

Starting from 2015, HRSB undertook significant effort to improve estimates of PLWDH who resided in Hawaii every year. Vigorous investigations were conducted using multiple internal and external data sets to determine whether a PLWDH resided in Hawaii at the end of the year of measurement. To accurately describe the proportion of PLWDH who receive HIV medical care and achieve viral suppression, it is critical to distinguish between PLWDH who are not engaged in HIV medical care from those who no longer live in Hawaii. As a result of these efforts, HRSB has been able to provide estimates of PLWDH resided in Hawaii and indicators along the HIV care continuum such as receipt of HIV medical care and viral suppression since 2015.

From 2015 to 2018, significant increases were observed for all three indictors: receipt of any HIV medical care, retention in HIV medical care, and viral suppression (**Figure 4, Table 7**). Percentage of receipt of any HIV medical care increased from 79.3% in 2015 to 83.2% in 2018. Although the percentage of retention in HIV medical care increased significantly from 51.2% in 2015 to 58.0% in 2018, it was well below the 2020 national goal at 90% (1). The percentage of PLWDH who are virally suppressed increased steadily from 69.4% in 2015 to 76.4% in 2018.

When examining the 4-year trend by selected patient characteristics, not all groups experienced the same increase as observed statewide. For receipt of any HIV medical care, all subgroups experienced steady increases during the 4-year period, except for younger persons (persons in age groups 13-24 years), Blacks, and males who inject drugs. For retention in care, the general pattern was an increase from 2015 to 2016 and then a decrease from 2016 to 2017 and 2018. Nevertheless, for most groups, percentage of those retained in care in 2018 was higher than that of 2015, except for persons in age group 25-34 years, Blacks, and males who inject drugs. Among those subgroups, percentage of those retained in care in 2018 was lower than that of 2015.

Less optimal progress was also observed in viral suppression among those same subgroups, namely, younger persons (persons in age groups 13-24 and 25-34 years), Blacks, and males who inject drugs. Percentages of viral suppression among those subgroups increased from 2015 to 2016 but decreased from 2016 to 2017 and 2018 to a level back to or below that of 2015 (Blacks and males who inject drugs) or below that of 2016 (persons in age groups 13-24 and 25-34 years). In all other groups, percentage of viral suppression increased steadily from 2015 to 2018.

Table 7. Receipt of HIV medical care by selected characteristics, 2015-2018, Hawaii

Characteristics	Total No. (% persons with \geq 1 CD4 or VL tests, % persons with \geq 2 CD4 VL tests) ^a						
	2015	2016	2017	2018			
Total	2,381 (79.3, 51.2)	2,393 (80.8, 58.9)	2,344 (82.1, 56.3)	2,347 (83.2, 58.0)			
Birth sex							
Female	273 (76.9, 46.2))	268 (78.7, 54.5)	252 (81.0, 55.2)	253 (79.1, 57.7)			
Male	2,108 (79.6, 51.9)	2,125 (81.1, 59.5)	2,092 (82.3, 56.5)	2,094 (83.7, 58.1)			
Age in years at the end of each	ch year						
13-24	47 (70.2, 31.9)	47 (83.0, 40.4)	35 (62.9, 31.4)	48 (64.6, 47.9)			
25-34	264 (70.1, 44.7)	267 (72.3, 48.7)	259 (72.6, 38.6)	293 (72.4, 44.7)			
35-44	415 (70.1, 42.2)	394 (75.9, 50.8)	354 (78.5, 48.0)	351 (78.3, 51.3)			
45-54	858 (82.5, 52.1)	822 (82.1, 61.8)	675 (83.0, 56.3)	652 (86.8, 60.1)			
≥55	797 (84.1, 58.2)	863 (84.4, 64.1)	1,021 (85.9, 64.5)	1,003 (86.6, 63.4)			
Race/ethnicity ^b							
Hispanic, all races	241 (73.4, 47.7)	243 (77.8, 53.5)	244 (81.6, 50.8)	258 (82.2, 50.8)			
American Indian/Alaska Native	5 (60.0, 40.0)	9 (66.7, 33.3)	4 (DS, DS)	5 (80.0, 60.0)			
Asian	364 (81.6, 55.5)	360 (85.8, 66.7)	357 (88.5, 66.1)	371 (88.7, 66.0)			
Black/African American	150 (73.3, 48.7)	152 (78.3, 52.6)	156 (64.1, 34.0)	147 (61.9, 38.1)			
Native Hawaiian/Other Pacific Islander (NHPI)	221 (80.1, 51.1)	228 (81.6, 62.7)	216 (85.2, 61.1)	212 (89.2, 65.1)			
White	1,193 (80.5, 51.2)	1,179 (79.8, 57.9)	1,137 (83.2, 57.5)	1,112 (83.5, 58.5)			
Multiple races	198 (79.8, 51.0)	218 (83.0, 59.6)	224 (77.7, 52.2)	236 (82.6, 56.8)			
Transmission category							
Male-to-male sexual contact (MSM)	1,721 (80.1, 52.1)	1,740 (81.8, 59.3)	1,722 (82.2, 57.1)	1,722 (84.5, 58.8)			
Injection drug use (IDU), female	57 (82.5, 52.6)	52 (80.8, 51.9)	56 (82.1, 51.8)	58 (84.5, 62.1)			
IDU, male	97 (81.4, 48.5)	89 (75.3, 60.7)	80 (82.5, 57.5)	83 (75.9, 48.2)			
MSM & IDU	153 (79.7, 51.6)	157 (77.7, 59.2)	160 (88.8, 54.4)	158 (82.3, 52.5)			
Heterosexual contact ^c , female	159 (81.1, 45.9)	171 (84.8, 61.4)	159 (85.5, 58.5)	160 (83.1, 61.9)			
Heterosexual contact, male	73 (79.5, 64.4)	90 (90.0, 73.3)	88 (78.4, 54.6)	86 (83.7, 62.8)			
Perinatal	10 (80.0, 70.0)	10 (80.0, 50.0)	9 (77.8, 44.4)	10 (80.0, 70.0)			
Other d	111 (59.5, 35.1)	84 (54.8, 33.3)	70 (61.4, 41.4)	70 (61.4, 42.9)			
County of residence e							
Hawaii County	370 (80.8, 47.0)	408 (79.7, 53.7)	404 (82.5, 48.8)	402 (82.8, 52.0)			
Honolulu County	1,622 (78.9, 52.1)	1,586 (80.2, 60.2)	1,554 (81.0, 56.7)	1,571 (82.9, 59.5)			
Kauai County	90 (81.1, 54.4)	98 (81.6, 63.3)	93 (88.8, 63.7)	85 (82.4, 63.5)			
Maui County	299 (78.6, 50.5)	301 (85.4, 57.8)	293 (85.4, 62.6)	289 (85.8, 56.7)			

^a CD4, CD4+ T-lymphocyte; the two tests (CD4/VL) should be performed ≥3 months apart each year. DS: data suppressed.

^b Excluded persons not differentiated between Asian and NHPI and persons of unknown race/ethnicity.

^c Included heterosexual contact with a person known to have, or to be at high risk for HIV infection.

^d Included hemophilia, blood transfusion and risk factors not reported or not identified.

^e Referred to county of residence at the end of each year of measurement.

Table 8. HIV viral suppression by selected characteristics, 2015-2018, Hawaii

Characteristics	Total No. (% virally suppressed) ^a							
	2015	2016	2017	2018				
Total	2,381 (69.4)	2,393 (73.4)	2,344 (73.3)	2,347(76.4)				
Birth sex								
Female	273 (63.7)	268 (68.3)	252 (73.0)	253 (73.5)				
Male	2,108 (70.1)	2,125 (74.0)	2,092 (73.3)	2,094 (76.8)				
Age in years								
13-24	47 (53.2)	47 (74.5)	35 (51.4)	48 (62.5)				
25-34	264 (56.4)	267 (63.7)	259 (60.2)	293 (60.4)				
35-44	415 (58.1)	394 (66.5)	354 (65.3)	351 (67.2)				
45-54	858 (73.2)	822 (74.7)	675 (74.1)	652 (80.7)				
≥55	797 (76.4)	863 (78.2)	1,021 (79.6)	1,003 (82.3)				
Race/ethnicity ^b								
Hispanic, all races	241 (66.8)	243 (72.4)	244 (75.4)	258 (75.6)				
American Indian/Alaska Native	5 (60.0)	9 (44.4)	4 (DS)	5 (80.0)				
Asian	364 (71.7)	360 (80.3)	357 (79.8)	371 (83.0)				
Black/African American	150 (58.0)	152 (64.5)	156 (51.9)	147 (52.4)				
Native Hawaiian/Other Pacific Islander (NHPI)	221 (68.3)	228 (71.9)	216 (75.5)	212 (78.8)				
White	1,193 (71.9)	1,179 (73.5)	1,137 (75.8)	1,112 (78.2)				
Multiple races	198 (63.6)	218 (71.6)	224 (62.1)	236 (72.0)				
Transmission category								
Male-to-male sexual contact (MSM)	1,721 (71.6)	1,740 (75.3)	1,722 (74.0)	1,722 (78.0)				
Injection drug use (IDU), female	57 (64.9)	52 (67.3)	56 (71.4)	58 (79.3)				
IDU, male	97 (69.1)	89 (64.0)	80 (72.5)	83 (62.7)				
MSM & IDU	153 (62.7)	157 (66.2)	160 (73.1)	158 (74.1)				
Heterosexual contact c, female	159 (69.8)	171 (75.4)	159 (79.9)	160 (78.1)				
Heterosexual contact, male	73 (64.4)	90 (81.1)	88 (65.9)	86 (75.6)				
Perinatal	10 (60.0)	10 (70.0)	9 (66.7)	10 (70.0)				
Other d	111 (50.5)	84 (48.8)	70 (52.9)	70 (55.7)				
County of residence ^e	,	,	,	,				
Hawaii County	370 (72.4)	408 (71.3)	404 (76.7)	402 (76.6)				
Honolulu County	1,622 (68.3)	1,586 (73.0)	1,554 (71.0)	1,571 (75.6)				
Kauai County	90 (70.0)	98 (74.5)	93 (82.1)	85 (78.8)				
Maui County	299 (71.2)	301 (78.1)	293 (77.5)	289 (79.9)				

^a Viral suppression was defined as last VL test in the year of measurement with a result of VL<200 copies/mL; DS: data suppressed.

^b Excluded persons not differentiated between Asian and NHPI and persons of unknown race/ethnicity.

^c Included heterosexual contact with a person known to have, or to be at high risk for HIV infection.

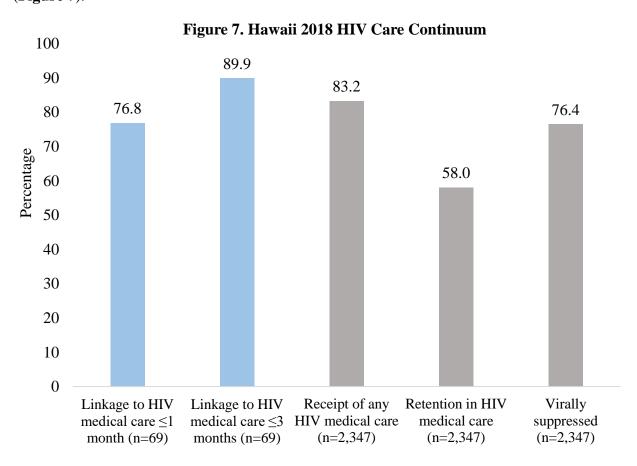
^d Included hemophilia, blood transfusion and risk factors not reported or not identified.

^e Referred to county of residence at the end of each year of measurement.

V. Diagnosis-based HIV care continuum, 2018, Hawaii

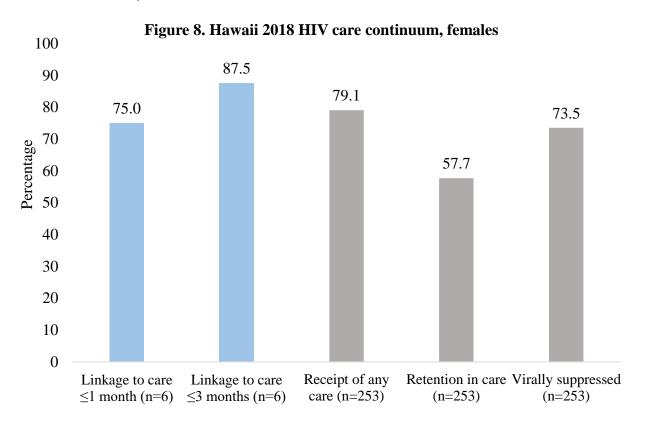
Figures 7 to 33 portray the diagnosis-based 2018 HIV care continuum of Hawaii, overall, and by selected characteristics. The diagnosis-based care continuum shows each step in the continuum as a percentage of persons achieving each indicator of care along the continuum for the total population as well as for persons of selected characteristics (1, 7).

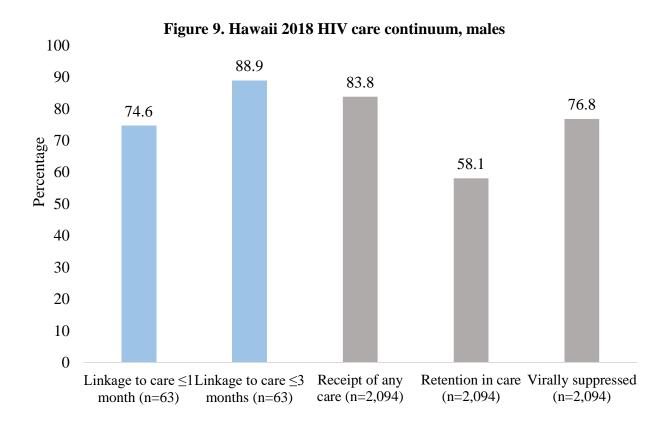
Figure 7 presents Hawaii 2018 HIV care continuum statewide. Persons aged \geq 13 years at year-end 2017 with HIV infection diagnosed by year-end 2017 and who were alive and residing in Hawaii at year-end 2018 were included in the analysis as the denominator for all selected indicators, except for linkage to care. Among the 2,347 persons included in the analysis, 1,953 (83.2%) received any HIV medical care, 1,362 (58.0%) were retained in care, and 1,794 (76.4%) were virally suppressed in 2018. The denominator for linkage to HIV medical care was the total number of new HIV diagnoses among persons aged \geq 13 years and residing in Hawaii at the time of HIV diagnosis in 2018. Among the 69 new diagnoses in 2018, 53 (76.8%) were linked to HIV medical care ≤1 month and 62 (89.9%) were linked to care ≤3 months after HIV diagnosis (**Figure 7**).



Figures 8 and 9 present Hawaii's 2018 HIV care continuum by birth sex.

Although males overall did slightly better in all indicators than females, no significant difference was observed in any of the selected indicators between males and females.





Figures 10 to 14 describe Hawaii's 2018 HIV care continuum by age groups.

In general, percentages of receipt of any HIV medical care, retention in HIV medical care, and viral suppression increased as age increased. The highest percentage was among persons aged ≥55 years (86.6%, 63.4%, and 82.3%, respectively) and the lowest percentage was among persons aged 25-34 years (72.4%, 44.7%, and 60.4%, respectively), except for receipt of any HIV medical care, where persons aged 13-24 years had the lowest (64.6%). Linkage to HIV medical care also improved as age increased; however, the lowest percentages were among persons aged 25-34 years (61.5% ≤1 month after HIV diagnosis and 80.8% ≤3 months after HIV diagnosis).

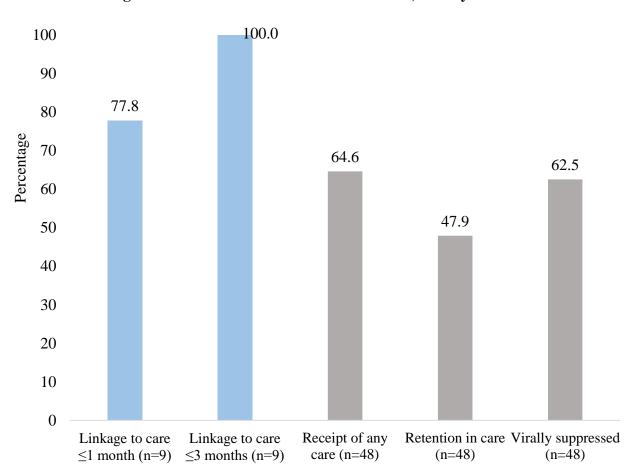


Figure 10. Hawaii 2018 HIV care continuum, 13-24 years old

37

Figure 11. Hawaii 2018 HIV care continuum, 25-34 years old 100 90 80.8 80 72.4 70 Percentage 61.5 60.4 60 50 44.7 40 30 20 10 0 Receipt of any Retention in care Virally suppressed Linkage to care Linkage to care ≤ 1 month (n=26) ≤ 3 months (n=26) care (n=293) (n=293)(n=293)

Figure 12. Hawaii 2018 HIV care continuum, 35-44 years old

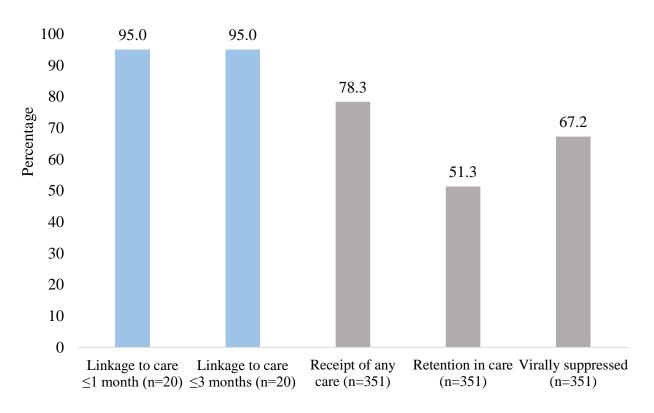


Figure 13. Hawaii 2018 HIV care continuum, 45-54 years old

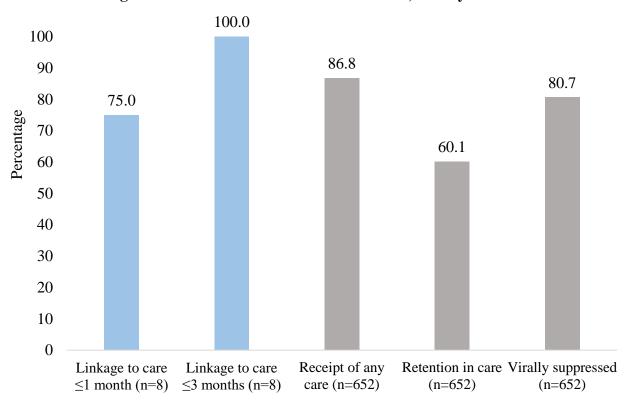
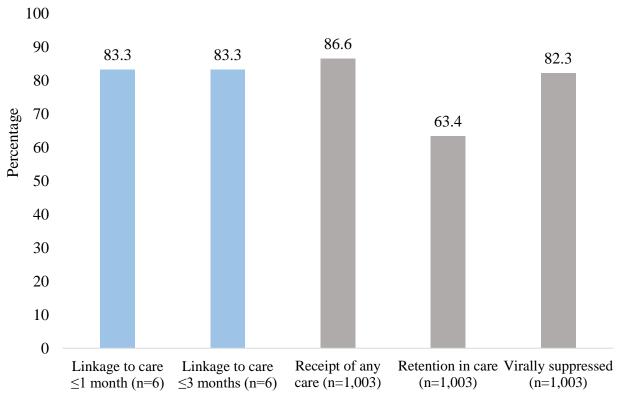


Figure 14. Hawaii 2018 HIV care continuum, ≥55 years old



Figures 15 to 20 describe Hawaii's 2018 HIV care continuum by race/ethnicity.

HIV care continuum was not done for American Indian/Alaska Native due to the small number of persons in this group. Among all other race/ethnicity groups included, NHPIs did best in receipt of any HIV medical care (89.2%) while Asians did best in linkage to care ≤1 month (90.0%), retention in HIV medical care (66.0%) and viral suppression (83.0%). Linkage to care were lowest among persons of multiple races (50% and 70%, respectively) while Blacks/African Americans did worst in all other three indicators (61.9%, 38.1%, and 52.4%, respectively).

100 90 85.7 82.2 75.6 80 71.4 70 Percentage 60 50.8 50 40 30 20 10 0 Receipt of any Retention in care Virally suppressed Linkage to care Linkage to care care (n=258) (n=258) $\leq 1 \text{ month (n=7)}$ \leq 3 months (n=7) (n=258)

Figure 15. Hawaii 2018 HIV care continuum, Hispanic, all races

100 100.0 90 80.0 80 Percentage 70 61.9 60 52.4 50 38.1 40 30 20 10 0 Receipt of any Retention in care Virally suppressed Linkage to care Linkage to care $\leq 1 \text{ month (n=5)}$ ≤ 3 months (n=5) care (n=147) (n=147)(n=147)

Figure 16. Hawaii 2018 HIV care continuum, Black/African American only

Figure 17. Hawaii 2018 HIV care continuum, Asian only

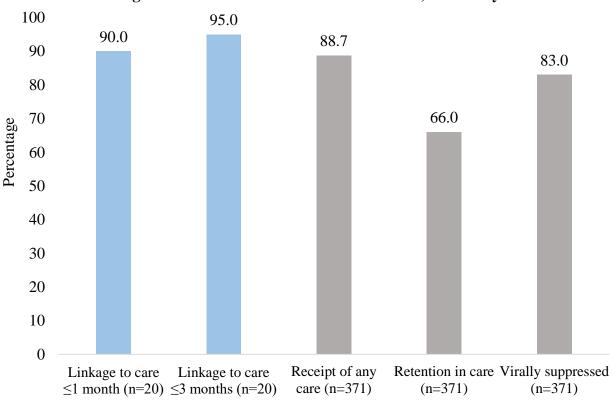


Figure 18. Hawaii 2018 HIV care continuum, Native Hawaiian / Other Pacific Islander only

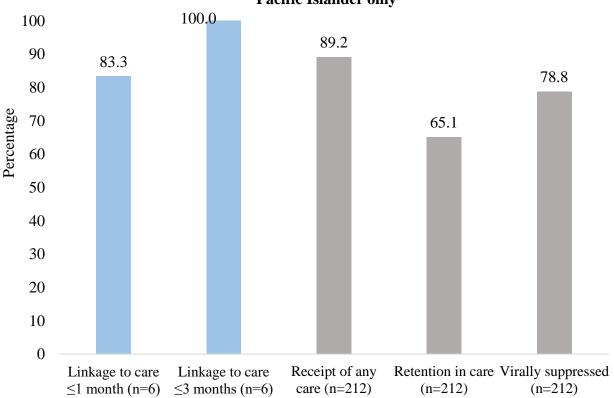


Figure 19. Hawaii 2018 HIV care continuum, White only

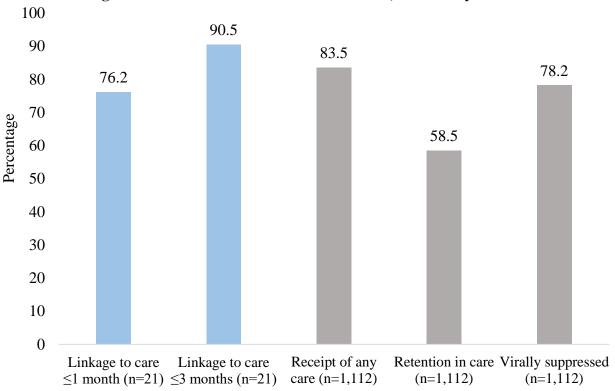
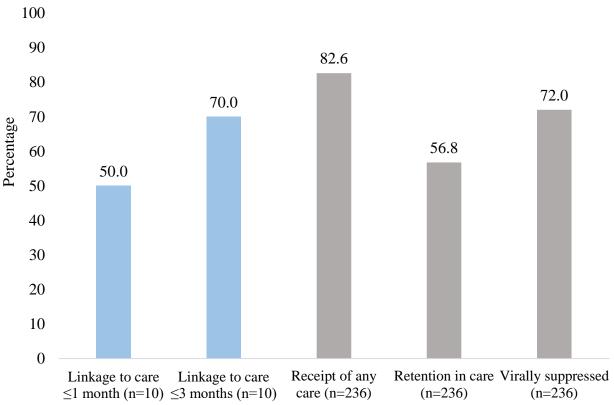


Figure 20. Hawaii 2018 HIV care continuum, multiple races



Figures 21 to 27 describe Hawaii's 2018 HIV care continuum by transmission categories.

HIV care continuum was not done for infections attributed to perinatal transmission due to the small number of persons in this group. Data (percentage) is suppressed if the total count in a transmission category is <5.

Females who inject drugs had the highest percentages for receipt of any HIV medical care (84.5%), retention in HIV medical care (62.1%) and viral suppression (79.3%). Infections due to the 'other' category of risk factors, including hemophilia, blood transfusion, and risk factors not reported or identified, had the lowest percentages for all three indicators (61.4%, 42.9%, and 55.7%, respectively).

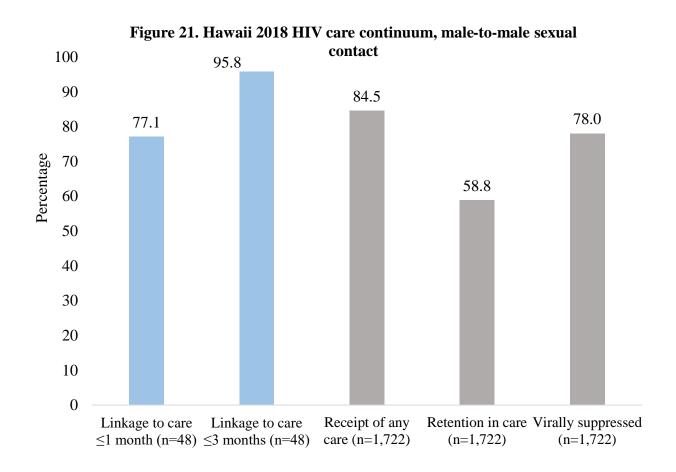


Figure 22. Hawaii 2018 HIV care continuum, females who inject drugs

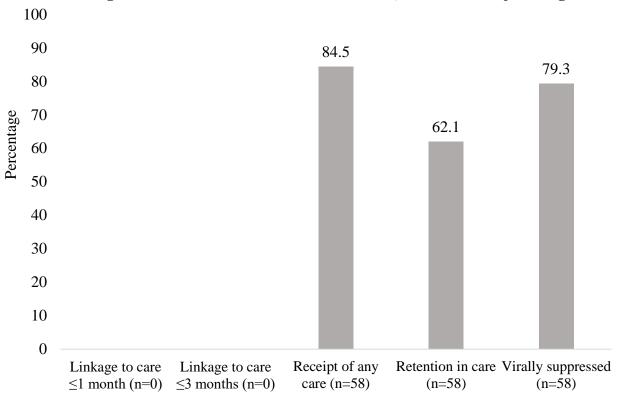


Figure 23. Hawaii 2018 HIV care continuum, males who inject drugs *DS: data suppressed due to the total counts < 5

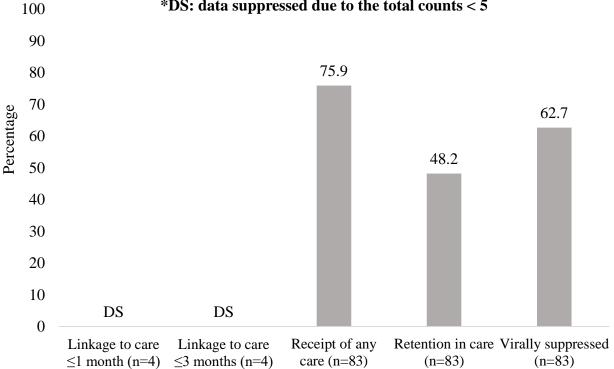


Figure 24. Hawaii 2018 HIV care continuum, MSM & IDU 100 *MSM & IDU: male-to-male sexual contact & injection drug use *DS: data suppressed due to total count <5 90 82.3 80 74.1 70 Percentage 60 52.5 50 40 30 20 10 DS DS 0 Linkage to care Linkage to care Receipt of any Retention in care Virally suppressed $\leq 1 \text{ month (n=4)}$ ≤ 3 months (n=4) care (n=158) (n=158)(n=158)

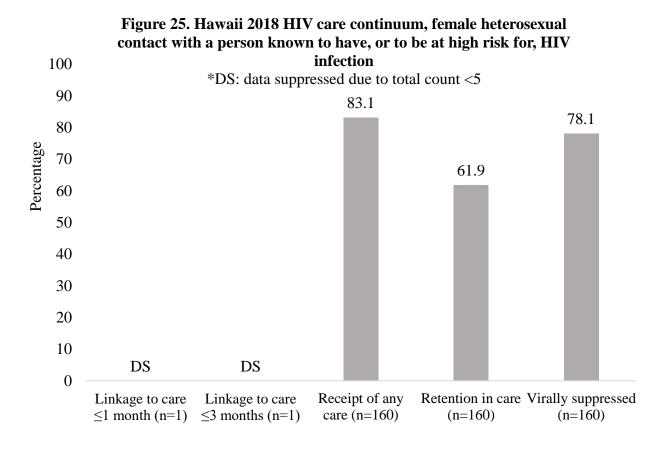


Figure 26. Hawaii 2018 HIV care continuum, male heterosexual contact with a person known to have, or to be at high risk for, HIV infection

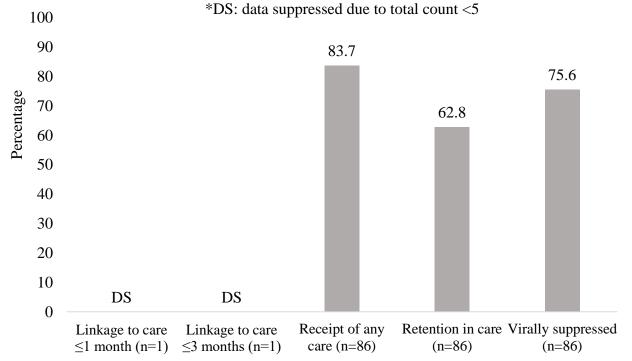
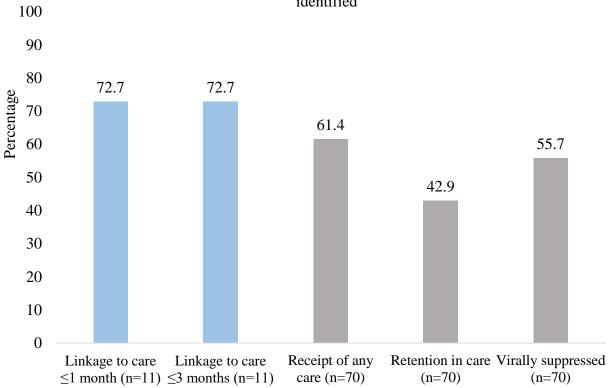


Figure 27. Hawaii 2018 HIV care continuum, other category*
*Including hemophilia, blood transfusion, and risk factors not reported or identified



Figures 28 to 31 describe Hawaii's 2018 HIV care continuum by county of residence.

Among the 2,347 persons included in the data analysis, 60 (2.6%) had missing data on county of residence. Missing data on county of residence were redistributed back according to the proportion each county had among persons with data on county. No significant difference was found in the percentage of any indicators presented here by county of residence at year-end 2018.

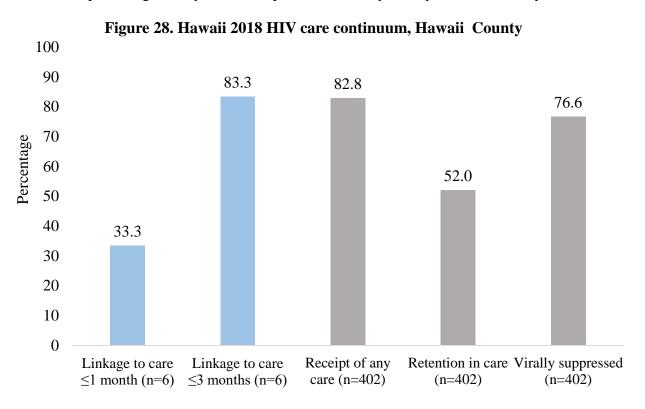


Figure 29. Hawaii 2018 HIV care continuum, Honolulu County

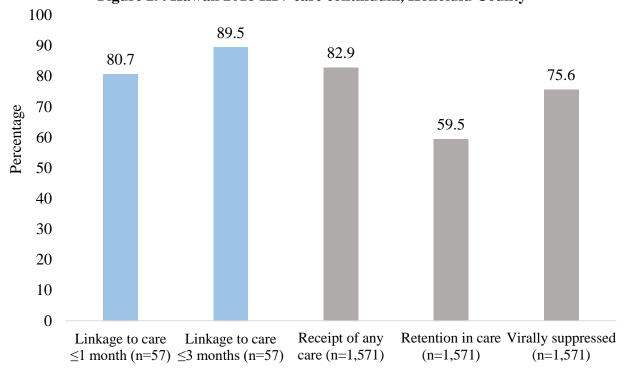
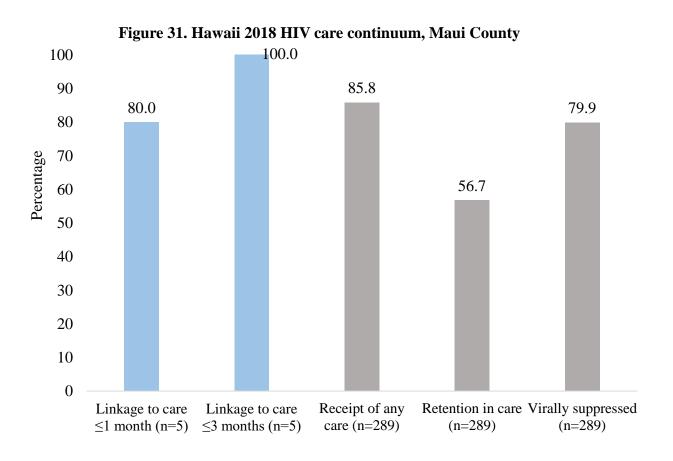


Figure 30. Hawaii 2018 HIV care continuum, Kauai County *DS: data suppressed due to total counts <5 100 90 82.4 78.8 80 70 Percentage 63.5 60 50 40 30 20 10 DS DS 0 Linkage to care Receipt of any Retention in care Virally suppressed Linkage to care $\leq 1 \text{ month (n=1)}$ ≤ 3 months (n=1) care (n=85) (n=85)(n=85)



Figures 32 and 33 present Hawaii's 2018 HIV care continuum by whether the individual was in case management in 2018. Among the 2,347 persons included, nearly half (49.7%) were in case management in 2018. Compared to those not in case management, persons in case management in 2018 did significantly better in receipt of any HIV medical care (94.1% vs. 72.5%), retention in care (69.0% vs. 47.2%), and viral suppression (86.7% vs. 66.3%).

Figure 32. Hawaii 2018 HIV care continuum, in case management 100 94.1 90.9 86.7 90 80 69.7 69.0 70 Percentage 60 50 40 30 20 10 0 Linkage to care Linkage to care Receipt of any Retention in care Virally suppressed ≤ 1 month (n=33) ≤ 3 months (n=33) care (n=1,166) (n=1,166)(n=1,166)

Figure 33. Hawaii 2018 HIV care continuum, not in case management 100 88.9 90 83.3 80 72.5 66.3 70 Percentage 60 47.2 50 40 30 20 10 0 Linkage to care Retention in care Virally suppressed Linkage to care Receipt of any ≤ 1 month (n=36) ≤ 3 months (n=36) care (n=1,181)(n=1,181)(n=1,181)

C. Characteristics of persons not in care in 2018, Hawaii

The definition of "in care" in this document is the same as receipt of any HIV medical care, which was measured by documentation of ≥1 CD4 (count or percentage) test or viral load test performed in 2018 (5). "Not in care" was defined as no documentation of CD4 (count or percentage) or viral load tests in 2018. Both "in care" and "not in care" was based on the 2,347 persons included in the 2018 HIV care continuum, which included data from persons aged ≥13 years at year-end 2017, whose HIV infection was diagnosed by year-end of 2017, and who were alive and residing in the state of Hawaii at year-end 2018. **Table 9** compares persons' care status (not in care vs in care) in 2018 by sex at birth, age, race and ethnicity, county of residence, HIV transmission category, and case management status in 2018.

No significant difference was found in the distribution of a person's care status by birth sex or county of residence. Nevertheless, significant differences were observed in the distribution of a person's care status by age, race/ethnicity, HIV transmission category, and case management status in 2018 (*P*s <.001). Persons not in case management were more likely to be not in care than persons in case management in 2018. Persons younger than 45 years old were more likely to be not in care compared to persons 45 years or older. Blacks/African Americans were more likely to be not in care compared to other racial/ethnic groups. When examined by transmission category, male injection drug users (24.1% vs state average 16.8%) and persons whose infections were attributed to the "other" category of risk factors, including hemophilia, blood transfusion, and risk factors not reported or not identified, were more likely to be not in care than all other categories (38.6% not in care vs state average of 16.8%).

Please be aware that a person's care status described here was for year 2018 and does not necessarily correspond to their care status at the time of publication of this report. The total number of not in care individuals in the state of Hawaii may be different at different points in time.

Table 9. Patient characteristics by care status in 2018 (not in care vs in care), Hawaii

Table 9. Patient characteristics by care status in 2018 (not in care vs in care), Hawaii								
		care (n=394)	In care (n=1,953					
Characteristics	No.	Percent	No.	Percent				
In case management in 2018								
Yes	69	5.9	1,097	94.1				
No	325	27.5	856	72.5				
Birth sex								
Female	53	20.9	200	79.1				
Male	341	16.3	1,753	83.7				
Age at year-end 2017 in years								
13-24	17	35.4	31	64.6				
25-34	81	27.7	212	72.4				
35-44	76	21.7	275	78.4				
45-54	86	13.2	566	86.8				
≥55	134	13.4	869	86.6				
Race/ethnicity ^a								
Hispanic, all races	46	17.8	212	82.2				
American Indian/Alaska Native	1	20.0	4	80.0				
Asian	42	11.3	329	88.7				
Black/African American	56	38.1	91	61.9				
Native Hawaiian/Other Pacific Islander (NHPI)	23	10.9	189	89.2				
White	183	16.5	929	83.5				
Multiple races	41	17.4	195	82.6				
Transmission category								
Male-to-male sexual contact (MSM)	267	15.5	1,455	84.5				
Injection drug use (IDU), female	9	15.5	49	84.5				
Injection drug use, male	20	24.1	63	75.9				
MSM & IDU	28	17.7	130	82.3				
Heterosexual contact b, female	27	16.9	133	83.1				
Heterosexual contact b, male	14	16.3	72	83.7				
Perinatal	2	20.0	8	80.0				
Other ^c	27	38.6	43	61.4				
County of residence at year-end 2018 ^d								
Hawaii County	69	17.2	333	82.8				
Honolulu County	269	17.1	1,302	82.9				
Kauai County	15	17.6	70	82.4				
Maui County	41	14.2	248	85.8				

Note: "In care" was defined as documentation of ≥1 CD4 or viral load test in 2018. "Not in care" was defined as no documentation of any CD4 or viral load test in 2018.

^a Excluded one person not differentiated between Asian and NHPI and 5 of unknown race/ethnicity.

^b Included heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

^c Included hemophilia, blood transfusion, and risk factors not reported or not identified.

^d Missing data on county (n=60, 2.6%) were redistributed.

- D. Epidemiology of HIV/AIDS among 7 key populations
- I. HIV infection among children, adolescents, and young adults
- 1) Diagnoses of HIV infection through 2018

The designation "children" refers to persons younger than 13 years old. The designation "adolescents" refers to persons aged 13 to 19 years and the designation "young adults" refers to persons aged 20-24 years (10). From the beginning of the epidemic (around 1983) to 2018, a total of 466 Hawaii residents <25 years old were diagnosed with HIV infections, of which 27 (5.8%) were children, 78 (16.7%) were adolescents and 361 (77.5%) were young adults. Three (11.1%) out of the 27 children, 12 (15.4%) out of the 78 adolescents, and 88 (24.4%) out of the 361 young adults were diagnosed between 2010 and 2018.

Table 10 describes diagnosed HIV infection among children, adolescents, and young adults by selected characteristics and time periods. Among 92.6% of children, 55.1% of adolescents, and 62.6% of young adults have progressed to stage 3 (AIDS). Among children, almost 60% were males, a little over a quarter were Asians, a little over a fifth were NHPIs, and about three quarters resided in Honolulu County at the time of HIV diagnoses. Almost two thirds (63.0%) were due to perinatal transmission and the rest were attributed to hemophilia, blood transfusion, or risk factors not reported or not identified. Among both adolescents and young adults with HIV infections, males accounted for over three quarters (79.5% among adolescents and 85.0% among young adults, respectively). Whites were the highest among different race/ethnicity groups (30.8% among adolescents and 39.9% among young adults). MSM was the main category of transmission (55.1% among adolescents and 64.3% among young adults, respectively).

2) Prevalent cases at year-end 2018

At year-end 2018, a total of 46 persons younger than 25 years old were living with diagnosed HIV in Hawaii, of which four (8.7%) were children, 7 (15.2%) were adolescents, and 35 (76.1%) were young adults living with HIV in Hawaii. Among the 35 young adults, 25 (75.8%) resided in Honolulu County and 5 (15.2%) resided in Hawaii County. Blacks accounted for over a quarter (25.7%), followed by Whites (20.0%), then by Asians (14.3%), Hispanics (14.3%), and persons of multiple races (14.3%). Male-to-male sexual contact (67.7%) was the dominant risk factor.

Table 10. Diagnoses of HIV infection through 2018 among children, adolescents, and young adults, by selected characteristics and time periods, Hawaii

		Children		Adolescents		Young Adults	
Characteristics	No.	Percent	No.	Percent	No.	Percent	
State total (n=466) *	27	5.8	78	16.7	361	77.5	
Progressed to stage 3 (AIDS)	25	92.6	43	55.1	226	62.6	
Birth sex							
Female	11	40.7	16	20.5	54	15.0	
Male	16	59.3	62	79.5	307	85.0	
Race/ethnicity ^a							
Hispanic, all races	3	11.1	11	14.1	46	12.7	
American Indian/Alaska Native	0	0	2	2.6	0	0	
Asian	8	29.6	10	12.8	53	14.6	
Black/African American	2	7.4	5	6.4	34	9.4	
Native Hawaiian/Other Pacific Islander	6	22.2	15	19.2	45	12.4	
White	5	18.5	24	30.8	144	39.8	
Multiple races	3	11.1	11	14.1	38	10.5	
Transmission category							
Male-to-male sexual contact (MSM)	0	0	43	55.1	232	64.3	
Injection drug use, female	0	0	1	1.3	7	1.9	
Injection drug use (IDU), male	0	0	1	1.3	10	2.8	
MSM & IDU	0	0	9	11.5	47	13.0	
Heterosexual contact b, female	0	0	10	12.8	38	10.5	
Heterosexual contact, male	0	0	1	1.3	9	2.5	
Perinatal	17	63.0	0	0	0	0	
Other ^c	10	37.0	13	16.7	18	5.0	
County of residence at HIV diagnosis							
Hawaii County	4	14.8	9	11.5	40	11.1	
Honolulu County	20	74.1	52	66.7	269	74.5	
Kauai County	2	7.4	7	9.0	11	3.0	
Maui County	1	3.7	10	12.8	41	11.4	

Notes: the designation "children" refers to persons younger than 13 years old, "adolescents" refers to persons aged 13 to 19 years, and "young adults" refers to persons aged 20-24 years. Only data from persons residing in Hawaii at the time of HIV diagnosis was included. Percent represents column percent except for the row "State total" which represents row percent. Percent total may not add up to 100 because of rounding.

^a Excluded one young adult who was not being differentiated between Asian and Native Hawaiian/Other Pacific Islander.

^b Included heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

^c Included hemophilia, blood transfusion, and risk factors not reported or not identified.

3) 2018 HIV care continuum

Figure 34 presents 2018 HIV care continuum among children, adolescents, and young adults living with diagnosed HIV at year-end 2018. The study population for linkage to HIV medical care included a total of 9 Hawaii residents <25 years old with HIV infection diagnosed in 2018. Of those 9 persons, none was younger than 19 years old. Seven (77.8%) of the 9 were linked to HIV medical care \leq 1 month and all 9 (100%) were linked to HIV medical care \leq 3 months after HIV diagnosis.

The study population for receiving HIV medical care and viral suppression was based on persons younger than 25 years old at year-end 2017 with HIV diagnosed through 2017 and who lived in Hawaii at year-end 2018. Among the 48 persons included, 25 (52.1%) were in case management (CM) in 2018. During 2018, significant difference was observed between persons in CM and persons not in CM in the percentages of receiving any HIV medical care (in CM, 92% vs not in CM, 34.8%), retention in HIV medical care (in CM, 68.0% vs not in CM, 26.1%), and viral suppression (in CM, 92.0% vs not in CM, 30.4%).

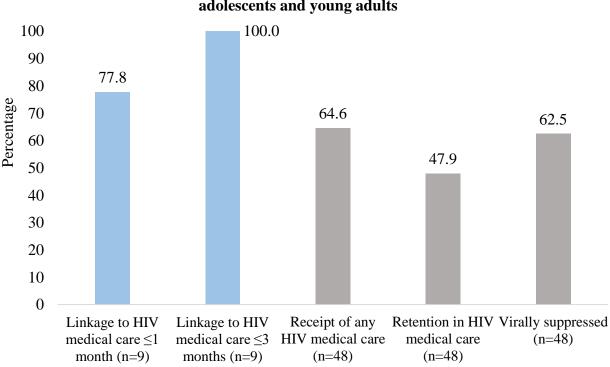


Figure 34. Hawaii 2018 HIV care continuum among children, adolescents and young adults

^{*}The designation "children" refers to persons younger than 13 years old. The designation "adolescents" refers to persons aged 13 to 19 years and the designation "young adults" refers to persons aged 20-24 years.

II. HIV infection among female adolescents and adults

1) Diagnosis of HIV infection through 2018

In this section, only data from female adolescents and adults (≥13 years old) were included based on birth sex. Data from children younger than 13 years old were reported under the section "HIV infection among children, adolescents, and young adults" on pages 52 to 54.

Table 11 describes diagnoses of HIV infection among female adolescents and adults by selected patient characteristics and time periods. From the beginning of the epidemic (around 1983) to 2018, a total of 482 female adolescents and adults were diagnosed with HIV infection. At HIV diagnosis, over two thirds (70.5%) resided in Honolulu County, 13.7% resided in Hawaii County, 9.3% resided in Maui County, and 6.4% in Kauai County. Nearly two thirds (65.6%) have progressed to stage 3 (AIDS).

Persons in age group 25-34 years (34.4%) constituted the largest percentage, followed by those in age group 35-44 years (29.3%). Over a third (35.3%) were Whites, followed by Asians (22.2%), then by Native Hawaiians/Other Pacific Islanders (18.5%). Heterosexual contact with a person known to have, or at increased risk of, HIV infection, was the most dominant risk factor (53.5%), followed by injection drug use (27.4%), then by risk factors not reported or not identified (19.1%).

When comparing the most recent 5-year period (2014-2018) to previous years, a larger proportion of infection was observed among persons ≥55 years (20.0% vs 5.9%, respectively), among Asians (37.5% vs 20.8%, respectively) and NHPIs (22.5% vs. 18.1%). Distribution of risk factors were similar between the two time periods.

2) Prevalent cases at year-end 2018

At year-end 2018, a total of 260 female adolescents and adults were living with diagnosed HIV infection in Hawaii. Persons ≥55 years old constituted 40.0%, followed by those in age group 45-54 years (26.9%). Persons in age group 13-24 years constituted 3.5%. Whites constituted 35.8%, followed by Asians (21.5%), NHPIs (14.6%), and mixed races (12.3%). Over 60% (62.3%) were due to heterosexual contact, 22.3% due to injection drug use, 12.7% due to risk factors not reported or not identified, and 2.7% due to perinatal transmission. Two thirds resided in Honolulu County and 17.4% in Hawaii County.

3) 2018 HIV care continuum

Figure 8 presents 2018 HIV care continuum among female adolescents and adults living with diagnosed HIV at year-end 2018. The study population for linkage to HIV medical care included a total of 6 female adolescents and adults residing in Hawaii at HIV diagnosis. Of those 6 persons, the youngest one was 23.7 years old. All 6 (100%) persons were linked to HIV medical care ≤1 month after HIV diagnosis.

The study population for receiving HIV medical care and viral suppression was based on females ≥13 years at year-end 2017 with HIV diagnosed through 2017 and who lived in Hawaii at year-end 2018. Among the 253 persons included, 79.1% received HIV medical care, 57.7% were retained in HIV medical care, and 73.5% were virally suppressed during 2018. Over half (n=143, 56.5%) were in case management (CM) in 2018. During 2018, statistically significant differences were observed between persons in CM and persons not in CM for the percentages of persons receiving any HIV medical care (in CM, 95.1% vs not in CM, 58.2%), retained in HIV medical care (in CM, 72.0% vs not in CM, 39.1%), and virally suppressed (in CM, 88.1% vs not in CM, 54.6%).

Table 11. Diagnoses of HIV infection through 2018 among female adolescents and adults, by selected characteristics and time period, Hawaii

	2014-2018		Before 2014		Cumulative	
Characteristics	No.	Percent	No.	Percent	No.	Percent
State total (n=482)	40	8.3	442	91.7	482	100
Progressed to stage 3 (AIDS)	12	30.0	304	68.8	316	65.6
Age at diagnosis in years						
13-24	4	10.0	66	14.9	70	14.5
25-34	11	27.5	155	35.1	166	34.4
35-44	12	30.0	129	29.2	141	29.3
45-54	5	12.5	66	14.9	71	14.7
≥55	8	20.0	26	5.9	34	7.1
Race/ethnicity a						
Hispanic, all races	2	5.0	29	6.6	31	6.4
American Indian/Alaska Native	0	0	2	0.5	2	0.4
Asian	15	37.5	92	20.8	107	22.2
Black/African American	1	2.5	29	6.6	30	6.2
Native Hawaiian/Other Pacific Islander	9	22.5	80	18.1	89	18.5
White	9	22.5	161	36.4	170	35.3
Multiple races	4	10.0	49	11.1	53	11.0
Transmission category						
Heterosexual contact b	22	55.0	236	53.4	258	53.5
Injection drug use	9	22.5	123	27.8	132	27.4
Other ^c	9	22.5	83	18.8	92	19.1
County of residence at HIV diagnosis						
Hawaii County	4	10.0	62	14.0	66	13.7
Honolulu County	28	70.0	312	70.6	340	70.5
Kauai County	2	5.0	29	6.7	31	6.4
Maui County	6	15.0	39	8.8	45	9.3

Notes: the designation "female adolescents and adults" refers to females by birth sex ≥ 13 years old at the time of HIV diagnosis. Only data from persons residing in Hawaii at the time of HIV diagnosis were included. Percent represents column percent except for the row "State total" which represents row percent. Percent total may not add up to 100 because of rounding. DS: data suppressed.

^a Excluded one person not being differentiated between Asian and Native Hawaiian/Other Pacific Islander and one with unknown race/ethnicity among young adults.

^b Included heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

^c Included hemophilia, blood transfusion, and risk factors not reported or not identified.

III. HIV infection among gay, bisexual, and other men who have sex with men

1) Diagnosis of HIV infection through 2018

Gay, bisexual, and other men who have sex with men (MSM) refer to men who have had sexual contact with men (i.e., homosexual contact) and men who have had sexual contact with both men and women (i.e., bisexual contact) (11). MSM is the population most affected by HIV in the United States. Data included in this section are from MSM only. It does not include data from the dual-risk category, MSM & injection drug use (IDU). Data from MSM & IDU will be covered in an independent section later.

Table 12 describes diagnoses of HIV infection among MSM by selected patient characteristics and time periods. From the beginning of the epidemic (around 1983) to 2018, a total of 3,388 MSM were diagnosed with HIV infections in Hawaii. At HIV diagnosis, nearly three quarters (73.5%) resided in Honolulu County, 11.9% resided in Hawaii County, 10.4% resided in Maui County, and 4.2% in Kauai County. Nearly three quarters (74.2%) have progressed to stage 3 (AIDS). Persons in age group 25-34 years (35.0%) constituted the largest percentage, followed by those in age group 35-44 years (33.4%), then those in age group 45-54 years (17.0%). MSM in age group 13-24 years constituted 8.0%. A total of 43 (1.3%) were in age group 13-19 years old. Over half (56.6%) were Whites, followed by Asians (15.5%), then by Native Hawaiians/Other Pacific Islanders (10.2%).

When comparing the most recent 5-year period (2014-2018) to previous years, a larger proportion of infection was observed among persons in age group 13-24 years (15.9% vs 7.4%, respectively) and in age group 25-34 years (43.7% vs 34.2%, respectively), among Asians (22.5% vs 14.8%, respectively), Blacks/African Americans (9.3% vs 3.4%, respectively), persons of multiple races (11.9% vs 4.7%), and Hispanics (11.9 vs 7.7%, respectively).

Table 12. Diagnoses of HIV infection through 2018 among gay, bisexual, and other men who have sex with men (MSM), by selected characteristics and time period, Hawaii

	2014-2018		Before 2014		Cumulative	
Characteristics	No.	Percent	No.	Percent	No.	Percent
State total (n=3,388)	302	8.9	3,086	91.1	3,388	100
Progressed to stage 3 (AIDS)	68	22.5	2,446	79.3	2,514	74.2
Age in years at HIV diagnosis						
13-24	48	15.9	227	7.4	275	8.1
25-34	132	43.7	1,055	34.2	1,187	35.0
35-44	55	18.2	1,076	34.9	1,131	33.4
45-54	41	13.6	536	17.4	577	17.0
≥55	26	8.6	192	6.2	218	6.4
Race/ethnicity						
Hispanic, all races	36	11.9	238	7.7	274	8.1
American Indian/Alaska Native	2	0.7	7	0.2	9	0.3
Asian	68	22.5	456	14.8	524	15.5
Black/African American	28	9.3	105	3.4	133	3.9
Native Hawaiian/Other Pacific Islander	34	11.3	312	10.1	346	10.2
White	98	32.5	1,818	58.9	1,916	56.6
Multiple races	36	11.9	144	4.7	180	5.3
Other ^a	0	0	6	0.2	6	0.2
County of residence at HIV diagnosis						
Hawaii County	31	10.3	372	12.0	403	11.9
Honolulu County	230	76.2	2,261	73.3	2,491	73.5
Kauai County	13	4.3	130	4.2	143	4.2
Maui County	28	9.3	323	10.5	351	10.4

Notes: Gay, bisexual, and other men who have sex with men (MSM) refer to men who have had sexual contact with men (i.e., homosexual contact) and men who have had sexual contact with both men and women (i.e., bisexual contact). Only data from persons residing in Hawaii at the time of HIV diagnosis were included. Percent represents column percent except for the row "State total" which represents row percent. Percent total may not add up to 100 because of rounding.

^a Included six persons not being differentiated between Asian and Native Hawaiian/Other Pacific Islander.

2) Prevalent cases at year-end 2018

At year-end 2018, a total of 1,772 MSM were living with diagnosed HIV infection in Hawaii. Persons ≥55 years old constituted 48.0%, followed by those in age group 45-54 years (23.3%). Persons in age group 13-24 constituted 1.5%. The youngest age at year-end 2018 was 18. Whites constituted 48.9%, followed by Asians (16.1%). About two thirds (66.4%) resided in Honolulu County, 17.4% in Hawaii County, 12.8% in Maui County and 3.5% in Kauai County.

3) 2018 HIV care continuum among MSM

Figure 21 presents 2018 HIV care continuum among MSM during 2018. The study population for linkage to HIV medical care included a total of 48 MSM with HIV infection diagnosed in 2018. Of those 48 MSM, 37 (77.1%) were linked to HIV medical care ≤1 month and 46 (95.8%) were linked to HIV medical care ≤3 months after HIV diagnosis.

The study population for receiving HIV medical care and viral suppression was based on MSM ≥13 years old at year-end 2017 with HIV diagnosed through 2017 and who lived in Hawaii at year-end 2018. A total of 1,722 persons were included, with the youngest person at 17 years old at year-end 2017. Among the 1,722 persons included, 84.5% received HIV medical care, 58.8% were retained in HIV medical care, and 78.0% were virally suppressed during 2018. Less than half (n=829, 48.1%) were in case management (CM) in 2018. During 2018, statistically significant differences were observed between persons in CM and persons not in CM for the percentages of persons receiving any HIV medical care (in CM, 94.2% vs not in CM, 75.5%), retained in HIV medical care (in CM, 69.4% vs not in CM, 49.1%), and virally suppressed (in CM, 87.5% vs not in CM, 69.2%).

IV. HIV infection among persons who inject drugs

1) Diagnosis of HIV infection through 2018

Table 13 describes diagnoses of HIV infection among females who inject drugs (FWID) and males who inject drugs (MWID) by selected patient characteristics and time periods. From the beginning of the epidemic (around 1983) through December 31, 2018, a total of 132 FWID were diagnosed with HIV infection in Hawaii. Persons in age group 25-34 years constituted the largest percentage (42.4%), followed by persons in age group 35-44 years (34.1%). The youngest was 19 years old. Whites constituted near half (48.5%), followed by NHPIs (16.7%) and multiple races (15.2%). At the time of HIV diagnosis, over two thirds (69.7%) resided in Honolulu County and 17.4% resided in Hawaii County. Over three quarters (80.3%) have progressed to stage 3 (AIDS).

A total of 225 MWID were diagnosed with HIV infection as of December 31, 2018 in Hawaii. The largest percentage was among persons in age group 35-44 years (40.9%), followed by those in age group 25-34 years (25.3%), then by those in age group 45-54 years (22.2%). Only one person was younger than 20 years old. Nearly half (48.9%) were Whites, followed by NHPIs (14.7%) and Asians (10.7%). At the time of HIV diagnosis, almost three quarters (74.2%) resided in Honolulu County, 14.2% resided in Hawaii County, 7.1% resided in Maui County, and 4.4% in Kauai County. Over 80% (82.2%) have progressed to stage 3 (AIDS).

When comparing the most recent 5-year period (2014-2018) to previous years, the percentage of diagnoses among persons younger than 45 years decreased among both groups (FWID: 55.5% vs 84.6%, respectively; MWID: 52.4% vs 73.0%, respectively). During 2014 to 2018, there was no HIV infection among persons younger than 25 years old for both groups. Among both groups, the percentage of diagnoses among Whites decreased (FWID: 44.4% vs 48.8%; MWID, 33.3% vs 50.5%), while the percentage of diagnoses among multiple races increased (FWID, 33.3 vs. 13.8%; MWID, 23.8 vs 5.4%).

Table 13. Diagnoses of HIV infection through 2018 among persons who inject drugs, by selected characteristics and time periods, Hawaii

characteristics and time periods, frawan	2014-2018		Bef	Before 2014		Cumulative	
Characteristics	No.	Percent	No.	Percent	No.	Percent	
Female	9	6.8	123	93.2	132	100	
Progressed to stage 3 (AIDS)	3	33.3	103	83.7	106	80.3	
Age in years at HIV diagnosis							
13-24	0	0	8	6.5	8	6.1	
25-34	3	33.3	53	43.1	56	42.4	
35-44	2	22.2	43	35.0	45	34.1	
45-54	2	22.2	12	9.8	14	10.6	
≥55	2	22.2	7	5.7	9	6.8	
Race/ethnicity							
Hispanic, all races	0	0	12	9.8	12	9.1	
Asian	0	0	8	6.5	8	6.1	
Black/African American	0	0	6	4.9	6	4.6	
Native Hawaiian/Other Pacific Islander	2	22.2	20	16.3	22	16.7	
White	4	44.4	60	48.8	64	48.5	
Multiple races	3	33.3	17	13.8	20	15.2	
County of residence at HIV diagnosis							
Hawaii County	1	11.1	22	17.9	23	17.4	
Honolulu County	7	77.8	85	69.1	92	69.7	
Kauai County	1	11.1	10	8.1	11	8.3	
Maui County	0	0	6	4.9	6	4.6	
Male	21	9.3	204	90.7	225	100	
Progressed to stage 3 (AIDS)	11	52.4	174	85.3	185	82.2	
Age in years at HIV diagnosis							
13-24	0	0	11	5.4	11	4.9	
25-34	4	19.1	53	26.0	57	25.2	
35-44	7	33.3	85	41.7	93	41.2	
45-54	4	19.1	46	22.5	50	22.1	
≥55	6	28.6	9	4.4	15	6.6	
Race/ethnicity ^a							
Hispanic, all races	0	0	20	9.8	20	8.9	
Asian	2	9.5	22	10.8	24	10.7	
Black/African American	4	19.1	17	8.3	21	9.3	
Native Hawaiian/Other Pacific Islander	3	14.3	30	14.7	33	14.7	
White	7	33.3	103	50.5	110	48.9	
Multiple races	5	23.8	11	5.4	16	7.1	
County of residence at HIV diagnosis							
Hawaii County	1	4.8	31	15.2	32	14.2	
Honolulu County	18	85.7	149	73.0	167	74.2	
Kauai County	1	4.8	9	4.4	10	4.4	
Maui County	1	4.8	15	7.4	16	7.1	

Notes: Only data from persons residing in Hawaii at the time of HIV diagnosis were included. Column percent total may not add up to 100 because of rounding.

^a Excluded one person not being differentiated between Asian and Native Hawaiian/Other Pacific Islander diagnosed before 2014.

2) Prevalent cases at year-end 2018

At year-end 2018, there were a total of 58 FWID living with diagnosed HIV infection in Hawaii. Of those 58 FWID, persons ≥55 years constituted 44.8%, followed by persons among age group 45-54 years (25.9%). The youngest person was 21 years old. Whites constituted 50.0%, followed by multiple races (15.5%), NHPIs (13.8%), Hispanics (12.1%), and Asians (8.6%). There were no female AIANs who inject drugs or female blacks who inject drugs that were living with diagnosed HIV infection at year-end 2018 in Hawaii. Among the 58 FWID living with diagnosed HIV infection at year-end 2018, over 70% (71.4%) resided in Honolulu County and 16.1% in Hawaii County.

A total of 86 MWID were living with diagnosed HIV infection in Hawaii at year-end 2018, of which 72.3% (n=63) resided in Honolulu County and 17.4% (n=15) in Hawaii County. Persons ≥55 years constituted 58.2%, followed by those in age group 45-54 years (24.4%). The youngest age was 23 years old. Whites constituted 46.5%, followed by Asians (16.3%), NHPIs (11.6%), and multiple races (10.5%).

3) 2018 HIV care continuum

Figure 22 and 23 presents 2018 HIV care continuum among FWID and MWID, respectively. The study population for linkage to HIV medical care included four MWID with HIV infection diagnosed in 2018, of which all were linked to care ≤1 month. No FWID was diagnosed with HIV infection in 2018. The study population for receiving HIV medical care and viral suppression was based on PWID ≥13 years old at year-end 2017 with HIV diagnosed through 2017 and who resided in Hawaii at year-end 2018. A total of 58 FWID and 83 MWID were include, of which the youngest person was 20 years old at year-end 2017.

Of the 58 FWID, 84.5% received any HIV medical care, 62.1% were retained in care, and 79.3% were virally suppressed during 2018. Among the 83 MWID, 75.9% received any HIV medical care, 48.2% were retained in care, and 62.7% were virally suppressed. Over 70% (72.4% for FWID and 54.2% for MWID) were in case management (CM) in 2018. During 2018, statistically significant differences were observed between persons in CM and persons not in CM for both groups for the percentages of persons receiving any HIV medical care (FWID: 92.9% vs 62.5%; MWID, 88.9% vs 60.5%), retained in HIV medical care (FWID, 69.1% vs 43.8%; MWID, 62.2% vs 31.6%), and virally suppressed (FWID, 85.7% vs 62.5%; MWID, 75.6% vs 47.4%).

V. HIV infection attributed to male-to-male sexual contact & injection drug use (MSM & IDU)

1) Diagnosis of HIV infection through 2018

Table 14 describes persons with HIV infection attributed to MSM & IDU by selected patient characteristics and time periods. From the beginning of the epidemic (around 1983) through December 31, 2018, a total of 341 persons were diagnosed with HIV infections attributed to MSM & IDU. Persons in age group 25-34 years constituted the largest percentage (41.1%), followed by persons in age group 35-44 years (33.1%). Persons in age group 13-24 years constituted 16.4%, with the youngest person at 18 years old. More than half of the infections were among Whites (56.0%), followed by Hispanics (9.4%), Asians (9.01%), and multiple races (8.8%). At the time of HIV diagnosis, over two thirds (72.7%) resided in Honolulu County and 11.7% resided in Hawaii County. Over three quarters (81.5%) have progressed to stage 3 (AIDS).

When comparing the most recent 5-year period (2014-2018) to previous years, the percentages of HIV diagnoses among persons in age group 13-24 years (22.7% vs 16.0%, respectively) and persons in age group 25-34 years (50.0% vs 40.4%. respectively) increased while the percentage of HIV diagnoses among persons in age group 35-44 years decreased (22.7% vs 33.9%, respectively). The percentage among Whites decreased (18.2% vs 58.6%, respectively) while percentages among multiple races (40.9% vs 6.6%, respectively) increased sharply. Percentages among Asians (13.6% vs 8.8%, respectively) and NHPIs also increased (13.6% vs. 7.5%, respectively). During 2014 to 2018, there was no HIV infection attributed to MSM & IDU among AIANs or Blacks.

Table 14. Diagnoses of HIV infection through 2018 among persons whose infection were attributed to male-to-male sexual contact & injection drug use (MSM & IDU), by selected characteristics and time periods, Hawaii

Characteristics	2014-2018		Bef	ore 2014	Cumulative	
	No.	Percent	No.	Percent	No.	Percent
State total (n=341)	22	6.5	319	93.5	341	100
Progressed to stage 3 (AIDS)	5	22.7	273	85.6	278	81.5
Age in years at HIV diagnosis						
13-24	5	22.7	51	16.0	56	16.4
25-34	11	50.0	129	40.4	140	41.1
35-44	5	22.7	108	33.9	113	33.1
45-54	0	0	27	8.5	27	7.9
≥55	1	4.6	4	1.3	5	1.5
Race/ethnicity						
Hispanic, all races	3	13.6	29	9.1	32	9.4
American Indian/Alaska Native	0	0	4	1.3	4	1.2
Asian	3	13.6	28	8.8	31	9.1
Black/African American	0	0	26	8.1	26	7.6
Native Hawaiian/Other Pacific Islander	3	13.6	24	7.5	27	7.9
White	4	18.2	187	58.6	191	56.0
Multiple races	9	40.9	21	6.6	30	8.7
County of residence at HIV diagnosis						
Hawaii County	1	4.6	39	12.2	40	11.7
Honolulu County	17	77.3	231	72.4	248	72.7
Kauai County	3	13.6	12	3.8	15	4.4
Maui County	1	4.6	37	11.6	38	11.1

Notes: MSM & IDU: refers to men who have had sexual contact with men (i.e., homosexual contact) and men who have had sexual contact with both men and women (i.e., bisexual contact) and who inject drugs. Only data from persons residing in Hawaii at the time of HIV diagnosis were included. Percent represents column percent except for the row "State total" which represents row percent. Percent total may not add up to 100 because of rounding.

2) Prevalent cases at year-end 2018

At year-end 2018, there were a total of 164 PLWDH whose HIV infection was attributed to MSM&IDU in Hawaii. Persons in age group 45-54 years constituted 35.4%, followed by persons ≥55 years (29.9%), then by persons in age group 35-44 years (22.0%). The youngest one was 22 years old at year-end 2018. Whites constituted 51.2%, followed by multiple races (17.1%), Hispanics (12.2%), and Asians (7.9%). Over two thirds (70.3%) resided in Honolulu County, 14.2% in Hawaii County, 10.3% in Maui County, and 5.2% in Kauai County.

3) HIV care continuum

Figure 24 presents 2018 HIV care continuum among persons whose HIV infection was attributed to MSM & IDU during 2018. The study population for linkage to HIV medical care included four persons with HIV infection attributed to MSM & IDU in 2018. Data on linkage to HIV medical care was suppressed as the total count of infection among this group was <5.

The study population for receiving HIV medical care and viral suppression was based on persons ≥13 years old at year-end 2017 with HIV diagnosed through 2017 and attributed to MSM & IDU, and who lived in Hawaii at year-end 2018. A total of 158 persons were included. Of those 158 persons included, 82.3% received any HIV medical care, 52.5% were retained in HIV medical care, and 74.1% were virally suppressed during 2018. Of those 158 persons, nearly two thirds (62.7%) were in case management (CM) in 2018. During 2018, significant differences were observed between persons in CM and persons not in CM for the percentages of persons receiving any HIV medical care (92.9% in CM vs 64.4% not in CM), retained in HIV medical care (63.6% in CM vs 33.9% not in CM), and virally suppressed (83.8% in CM vs 57.6% not in CM).

VI. HIV infection among transgender persons

In this report, persons were classified as transgender if sex at birth and current gender (the gender with which a person identifies) reported by the person were different (12, 13). Transgender women refer to persons who reported their sex assigned at birth as male but identify their current gender as female. Transgender men refer to persons who reported their sex assigned at birth as female, but identify their current gender as male (12, 13).

Data on sex at birth and current gender in eHARS are self-reported and collected and reported by the individual's medical provider (12, 13). There may be significant inconsistency among medical providers in how they report current gender, and there may be inconsistency in whether an individual shares their gender identity to their medical provider. Data on sex at birth and current gender in eHARS may also come from information on laboratory reports, and such data may be more likely to reflect sex at birth or gender as listed on legal identification, rather than self-reported gender.

Sex at birth is a required field in eHARS and it was populated for all individual with values of either "Male" or "Female." In contrast, current gender is not a required variable in eHARS. Starting in 2009, jurisdictions had the option to submit information on current gender identity to CDC using eHARS with values of "male, female, male-to-female, female-to-male, and additional gender identity" (12, 13). As a result, data on current gender were mostly missing until more recent years, i.e., after 2009. For example, among the 2,426 prevalent cases of persons living with diagnosed HIV infections at year-end 2018 in Hawaii, only 1,280 (52.8%) had data on self-reported current gender.

CDC uses a hierarchical algorithm to assign transmission categories that incorporate an individual's HIV risk factors and sex at birth (12). According to CDC's hierarchical algorithm, MSM would be the assigned transmission category for a transgender woman who had sexual contact with a male (12). In order to provide a more meaningful analysis of reported HIV among transgender individuals, we analyzed transgender cases by combining the transmission categories of MSM and heterosexual contact into one category, "sexual contact" (13). MSM & IDU was referred as 'sexual contact/IDU'.

1) Diagnosis of HIV infection among transgender persons

From the beginning of the epidemic (around 1983) through 2018, a total of 4,767 Hawaii residents had been diagnosed with HIV infections, of which all persons had data on birth sex but only 981 (20.6%) had data on current gender. Of those 981 persons with data on both birth sex and current gender, 104 (10.6%) were females and 877 (89.4%) were males based on birth sex. Among the 104 females, one was a transgender man. Among the 877 males, 43 (4.9%) were identified as transgender women.

Of the 43 transgender women, 25 (58.1%) were diagnosed before 2010 and 18 (41.9%) were diagnosed between 2011 and 2018. Among the 18 diagnosed between 2011 and 2018, 5 were diagnosed in 2017 and 4 diagnosed in 2018. At HIV diagnosis, 12 (27.9%) were in age group 13-24 years, 19 (44.2%) in age group 25-34 years, 8 (18.6%) in age group 35-44 years and 4 (9.3%) persons were 55 years or older.

A total of 15 (34.9%) were Native Hawaiians / Other Pacific Islanders, 9 (20.9%) were multiple races, 8 (18.6%) were Asians, 7 (16.3%) were Hispanics, and 4 (9.3%) were Blacks/African Americans. A total of 33 (76.7%) were attributed to sexual contact and the rest 10 (23.3%) due to sexual contact/injection drug use. At HIV diagnosis, 39 (90.7%) resided in Honolulu County and the rest 4 (9.3%) resided in neighbor island counties.

2) Transgender persons living with HIV infection at year-end 2018

Among the 2,426 persons living with diagnosed HIV infection in Hawaii at year-end 2018, all had data on birth sex but only 1,280 (52.8%) had data on current gender. Among the 1,280 persons with data on both birth sex and current gender, 130 (10.2%) were female at birth and 1,150 (89.8%) were males at birth.

Among the 130 females (based on birth sex) with data on current gender, 126 (96.9%) had female as current gender and four (3.1%) were in a category other than female. Of those four persons, one person's current gender was in the category of 'additional gender identity', two were in the category of male, and one was in the category of 'transgender-female to male'. All four of these individuals resided in the Honolulu County at year-end 2018, were in care and virally suppressed in 2018.

Among the 1,150 males (based on birth sex) who had data on current gender, 1,114 (96.9%) had male as current gender and 36 (3.1%) had transgender-male to female as current gender. Among those 36 transgender women, 3 (8.3%) were diagnosed in 1980s, 4 (11.1%) in the 1990s, 13 (33.3%) in the 2000s, and 16 (44.4%) were diagnosed between 2011-2018. At the time of HIV/AIDS diagnosis, a total of 30 (83.3%) resided in Hawaii and the remaining 6 (16.7%) resided outside of Hawaii. Of note, five persons (14.7%) were diagnosed in 2017 and 4 (11.8%) in 2018, all resided in Hawaii at HIV/AIDS diagnosis.

Among the 36 transgender women, 12 (33.3%) were in age group 20-34 years, 12 (33.3%) in age group 35-44 years, and 12 (33.3%) were ≥45 years old. Twelve (33.3%) were Native Hawaiians / Other Pacific Islanders, 7 (19.4%) Hispanics/Latinos, 6 (16.7%) Asians, 6 (16.7%) of mixed races, 4 (11.1%) Whites, and one Black/African American. Twenty-five (69.4%) out of the 36 transgender women were diagnosed with HIV infections attributed to sexual contact, 10 (27.8%) attributed to sexual contact/IDU, and one with risk factors not identified or reported. The majority (88.9%) resided in Honolulu County, 3 (8.3%) in Hawaii County and 1 (2.8%) in Maui County at year-end 2018.

3) 2018 HIV care continuum among transgender persons

Among the 69 HIV infections diagnosed among Hawaii residents in 2018, all (100%) had data on both sex at birth and current gender. A total of four were identified as transgender women. Data on linkage to HIV medical care among those four people was suppressed because the total number of infections in this group was <5.

A total of 36 persons identified as transgender persons were living with HIV infections diagnosed through 2017 and resided in Hawaii at year-end 2018. Of those 36 persons, 32 were transgender women, three were transgender men, and one was female at birth and current gender was in the category of additional gender identity. Of those 36 transgender persons, 22 (66.7%) were in case management (CM) in 2018, 34 (94.4%) were in care in 2018, 26 (72.2%) were retained in care in 2018, and 26 (72.2%) were virally suppressed in 2018 (**Figure 35**). Significant difference was observed between persons in CM and persons not in CM for percentage of persons retained in HIV medical care (in CM: 83.3%; not in CM: 50.0%), but not for percentages of persons receiving any HIV medical care or virally suppressed.

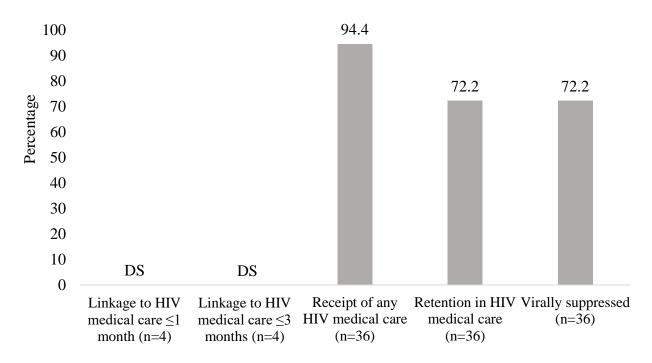


Figure 35. Hawaii 2018 HIV care continuum among transgenders

VII. HIV infection in prison

In the state of Hawaii, the Department of Public Safety overseas four jails and four prisons. The four jails and their addresses are:

- (1) Hawaii Community Correctional Center (HCCC): 60 Punahele Street, Hilo, HI 96720. HCCC's reintegration program, Hale Nani, is located at Panaewa street.
- (2) Kauai Community Correctional Center (KCCC): 3-5351 Kuhio Highway, Lihue, HI 96766;
- (3) Maui Community Correctional Center (MCCC): 600 Waiale Drive, Wailuku, HI 96793
- (4) Oahu Community Correctional Center (OCCC): 2199 Kamehameha Highway, Honolulu, HI 96819

The four prisons and their addresses are:

- (1) Halawa Correctional Facility (HCF), 99-902 Moanalua Road, Aiea, HI 96701; Some inmates from HCF were housed in Saguaro Correction Center located at 1250 E Arica Rd, Eloy, AZ 85131;
 - (2) Waiawa Correctional Facility: 94-560 Kamehameha Highway, Waipahu, HI 96797;
 - (3) Women's Community Correctional Center: 42-477 Kalanianaole Hwy, Kailua, HI 96734;
 - (4) Kulani Correctional Facility: P.O. Box 4459 Hilo, HI 96720

The only federal prison, the Federal Detention Center (FDC) was located at 351 Elliott Street, Honolulu, HI 96819.

There is no data field in the eHARS data system that directly indicates whether a person is in the custody of state and federal corrections authorities at a particular time. There is also no data field in eHARS that directly indicates, at the time of HIV diagnosis, whether a person is in custody of state and federal correctional authorities. In this report, to determine whether a person was in custody of state and federal correctional authorities at HIV/AIDS diagnosis, we used data fields including name and address of the facility at HIV/AIDS diagnosis and the person's residential address at HIV/AIDS diagnosis, and assumed that facility or residential address matching the name and address of any of the jails and prisons in Hawaii indicated that the individual was in the custody of state or federal correctional authorities.

To determine whether a person living with diagnosed HIV infection (PLWDH) was in custody of state and federal correctional authorities at the end of 2018, we use that person's address at year-end 2018. Indicators of the HIV care continuum, including whether a person had received any HIV medical care (or in care), whether a person was retained in HIV medical care, or whether a person was virally suppressed during 2018, were based on documented laboratory data, in particular, CD4 and viral load testing data, in eHARS during 2018.

1) Diagnosed HIV infection among persons in custody

From the beginning of the epidemic (around 1983) through 2018, a total of 28 persons were diagnosed with HIV infection while in custody of state and federal correctional authorities in Hawaii. No person was diagnosed with HIV infection in 2018 while in custody of state and federal correctional authorities. Of those 28 persons, 2 were diagnosed in the 1980s, 5 diagnosed between 1990 and 1999, 11 diagnosed between 2000 to 2009, and 10 were diagnosed between 2011 and 2018. At the time of HIV/AIDS diagnosis, a total of 13 (46.4%) were in custody in Oahu Community Correctional Center, 7 (25.0%) in the Federal Detention Center in Honolulu, 5 (17.9%) in Halawa Correctional Center, 1 (3.6%) in Waiawa Correctional Facility, 1 (3.6%) in Hawaii Community Correctional Center, and 1 (3.6%) in Kauai Correctional Facility.

At the time of HIV diagnosis, 5 (17.9%) were at stage 1, 8 (28.6%) at stage 2, 5 (17.9%) at stage 3 and 10 (35.7%) with stage unknown. A total of 17 (60.7%) has progressed into stage 3 (AIDS), including the 5 diagnosed at stage 3 (AIDS). Of the 28 persons, 3 (10.7%) were females and 25 (89.3%) were males. A total of four (14.3%) were in age groups 13-24 years (with the youngest one almost 18 years old), 11 (39.3%) in age group 25-34 years, 8 (28.6%) in age group 35-44 years, 4 (14.3%) in age group 45-54 years, and 1 (3.6%) was in the group 55 years or older.

A total of 11 (39.3%) were Whites, 6 (21.4%) were multiple races, 6 (21.4%) were Asians, 3 (10.7%) were Native Hawaiians/other Pacific Islanders, one Hispanic (3.6%), and one Black (3.6%). A total of 12 (42.9%) were due to male-to-male sexual contact, 10 (35.7%) due to injection drug use, 5 (17.9%) due to male-to-male sexual contact and injection drug use and 1 (3.6%) due to risk factors not reported or not identified. The three females diagnosed with HIV infection while in custody were all due to injection drug use.

2) Persons living with diagnosed HIV/AIDS while in custody at year-end 2018

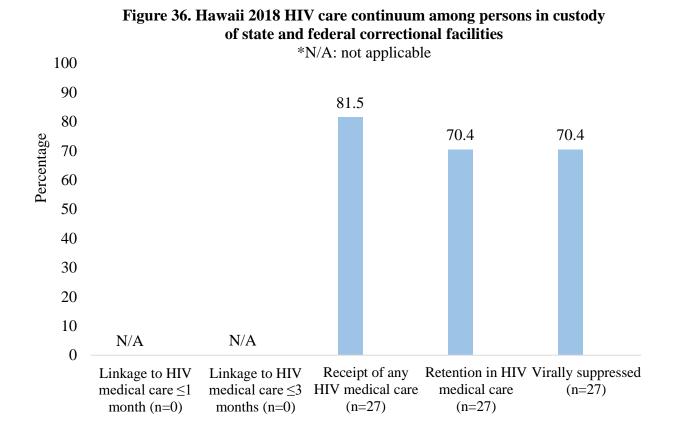
A total of 27 persons living with diagnosed HIV infection were in the custody of state and federal correctional authorities at year-end 2018. Of those 27 persons, three (11.1%) were diagnosed in the 1980s, 4 (14.8%) were diagnosed in the 1990s, 7 (25.9%) were diagnosed between 2000 and 2009, and the rest 13 (48.2%) were diagnosed between 2010 and 2017. A total of 23 (85.2%) resided in Hawaii and 4 (14.8%) resided outside of Hawaii at the time of HIV/AIDS diagnosis. Among the 23 that resided in Hawaii at HIV/AIDS diagnosis, 6 (26.1%) were in custody at state and federal correctional facilities in Hawaii at HIV/AIDS diagnosis.

A total of 24 (88.9%) were males and 3 (11.1%) were females. Age groups 25-34 and 35-44 years each consisted of 6 persons (22.2%), 7 (25.9%) were in age group 45-54 years, and 8 (29.6%) were 55 years or older. A total of 12 (44.4%) were Whites, 7 (25.9%) were Native Hawaiians/Other Pacific Islanders, 5 (18.5%) were multiple races, and 3 were other racial/ethnic groups. Male-to-male sexual (MSM) contact and injection drug use (IDU) were the two most frequent risk factors (MSM: n=11, 40.7%; IDU: n=11, 40.7%), followed by MSM & IDU (n=4, 14.8%). One (3.7%) was due to heterosexual contact with a person known to have, or at increased risk for, HIV infection.

3) 2018 HIV Care Continuum among PLWDH while in custody at year-end 2018

In 2018, there was no HIV infection diagnosed among persons in the custody of state and federal correctional authority. Therefore, no data was applicable for linkage to HIV medical care. Those 27 persons included in the 2018 prevalence population of PLWDH while in state and federal custody also constituted the study population for indicators of receipt of HIV medical care and viral suppression for the 2018 HIV care continuum among PLWDH while in custody at year-end 2018.

Of those 27 persons, 15 (55.6%) were in case management (CM) in 2018, 22 (81.5%) were in care, 19 (70.4%) were retained in care, and 19 (70.4%) were virally suppressed in 2018 (**Figure 36**). Although not statistically significant due to small counts, large difference was observed between those in case management and those not for percentages of persons receiving any HIV medical care (in CM: 93.3%; not in CM: 66.7%), retained in HIV medical care (in CM: 80.0%; not in CM: 53.9%), and virally suppressed (in CM: 80.0%; not in CM: 58.3%). In 2018, there was no person diagnosed with HIV infection while in the custody of state and federal correctional authority.



Limitations

Several limitations need to be addressed in the development of this epidemiologic profile. First, despite extensive investigation of a person's most recent known address at year-end 2018, there remained 243 (9.3%) individuals of unknown whereabouts at year-end 2018. Among those 243 individuals, a total of 183 (75.3%) individuals whose HIV infections were diagnosed by year-end 2008 and who had not been in care since 2008 were excluded from further analysis. This might have resulted in underestimating prevalence cases and prevalent rates, but overestimating indicators such as receipt of any HIV medical care, retention in care and viral suppression.

Nevertheless, the bias should be minimal for the following reasons. First, among persons identified as residing in the state of Hawaii at year-end 2018 (n=2,361), there was no one whose last HIV related laboratory test was dated in 2008 or earlier. Secondly, 110 (60.1%) of the 183 individuals excluded from further analysis were diagnosed by year-end 2000, which was almost 20 years ago. Based on the natural disease progress of HIV infection, if a patient had not been in care for ≥10 years since HIV diagnosis, the odds of survival were likely low (8). It is therefore reasonable to assume that those individuals had moved away from Hawaii and were receiving care somewhere else.

Data on county of residence at year-end 2018 was missing for 60 (2.5%) out of the 2,426 prevalent cases of PLWDH, 30 (2.2%) out of the 1,381prevalent cases of PLWDA, and 60 (2.6%) of the 2,347 persons included as the denominator for receipt of HIV medical care and viral suppression. Cases missing data on county were redistributed among counties based on the proportion in each county of cases for which data on county was available. Therefore, the actual counts of persons with data on county of resident were smaller than what was presented in this report.

Due to missing data on self-reported current gender, estimates on prevalent cases of transgender persons living with HIV infection would be underestimated (10). As data collection on current gender improves each year, future data may provide a more accurate and comprehensive description of HIV infection among this population.

Lastly, results based on analysis on a dataset exported at a certain time point would be limited to the information available at the time when the data was exported. The surveillance system is dynamic, receiving updates whenever new information is available through ongoing national deduplication and data cleaning efforts. Hence, data reported from datasets exported at different time points would result in slight differences in selected outcomes, such as number of new diagnoses in the most recent years.

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